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VOLUME XIII.
NUMBER 2.

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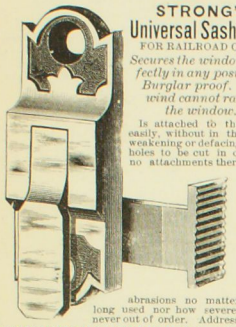

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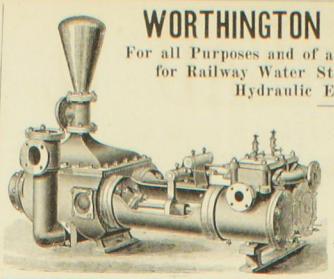

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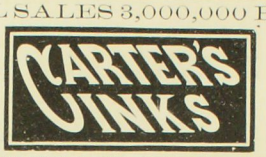

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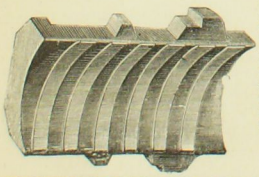

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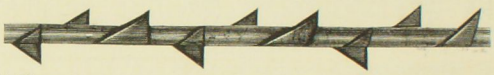

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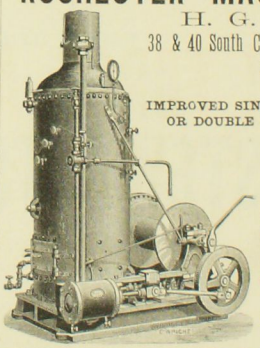

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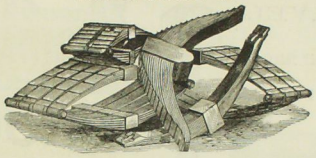

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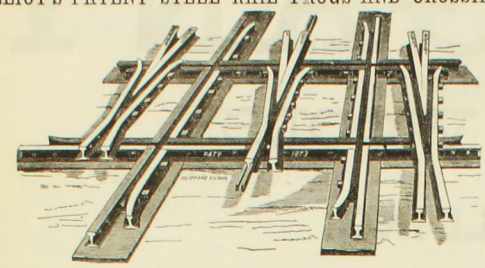

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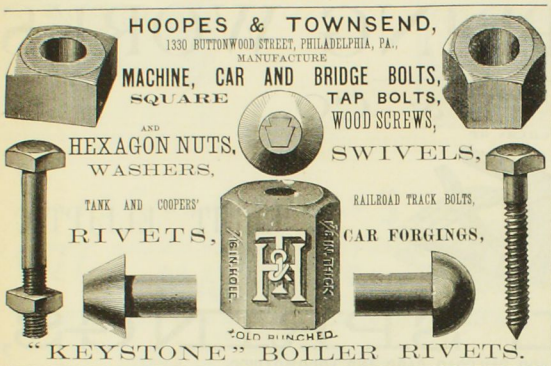

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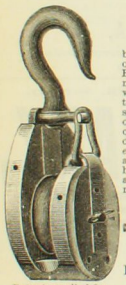

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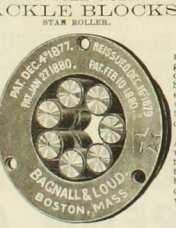

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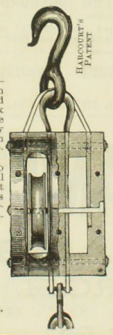

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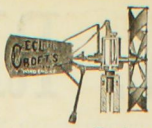

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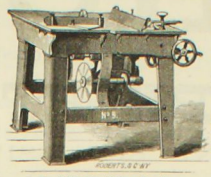

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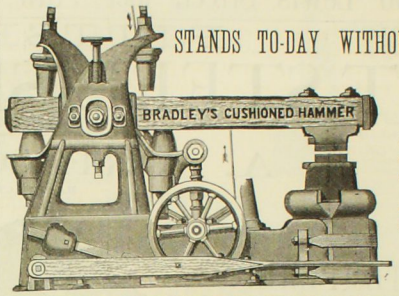

It approaches nearer the action of the Smith's arm than any hammer in the world.

BRADLEY & CO.,

Syracuse, N. Y.

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GROUND TRIPOLI,

THE BEST THING KNOWN FOR CLEANING AND POLISHING THE

METAL WORK on LOCOMOTIVES and CARS.

That manufactured by us is warranted not to scratch, and has been used for several years by the principal Railroad Companies and by Fire Departments generally, and is highly recommended by them. Send for sample.

GEORGIA MINING & MANUFACTURING CO.,

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Established 1818.

NEW ENGLAND GLASS WORKS.

W. L. LIBBEY & SON,

67 Federal St., Boston, Mass.

MANUFACTURERS OF THE

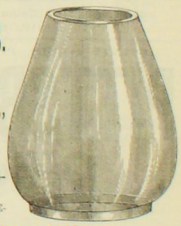
"N. E. Standard Railway Colors,"

RUBY, GREEN & BLUE,

FOR

LANTERN GLOBES, CORRUGATED & BULL'S-EYE SWITCH LIGHT LENSES.

RAILWAY SUPPLIES IN GLASS, OF EVERY DESCRIPTION.



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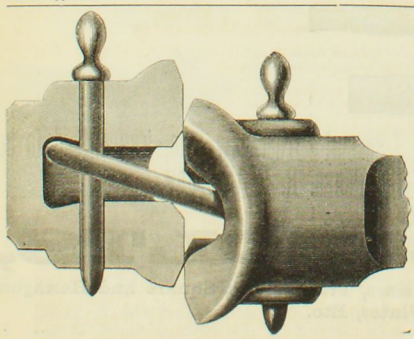


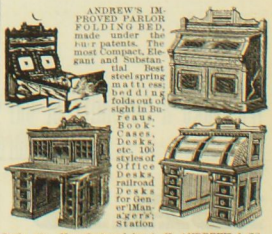
"VICTORY OVER MORE THAN 30 CONTESTANTS."

Victory over more than 30 Self-Couplers in the Master Car-Builders' Convention of June, 1876. Also indorsement for safety in coupling by the Yard Masters, in their Convention, June, 1877, and by 300 others who were unable to attend the Convention, and 300 railroad officials who are resident in 26 States, and who admitted superiority over any other yet produced. Try 30 free of royalty, and see for yourself! Pattern free, and no change in timbers or connections. Those made by Wilson, Walker & Co., Pittsburgh, Pa., *will save 200 per cent. in repairs*, and give double life service over *old styles of* wrought iron. About 43,000 in use by 146 railroads. The *saving in repairs* by using *my invention* is from 20 per cent. to 80 per cent. as per *report of many officers*.

J. B. SAFFORD,

Inventor and Sole Proprietor,

BUFFALO, N. Y.



ANDREW'S IMPROVED PARLOR FOLDING BED, made under the four patents. The most Compact, Elegant and Substantial Best steel spring mattress bedding folds out of sight in Bureaus, Book-Cases, Desks, etc. 100 styles of Office Desks, railroad Desks for General Managers; Station Desks, etc. Manufactured by A. H. ANDREWS & CO 195 and 197 Wabash Ave., Chicago.

LOWE'S METALLIC PAINT COMPANY, Chattanooga, Tenn.,

MANUFACTURERS OF

Lowe's Metallic Paint!

This Paint has now been before the public sufficiently long to establish its qualities as first-class Metallic Paint in every respect. It has covering properties superior to any other Metallic Paint made. IT TAKES ABOUT 18 PER CENT. LESS OIL THAN ANY OTHER METALLIC PAINT.

It is absolutely free from Sulphates of every kind and description, which in many other Metallic Paints prove so injurious to Iron and Tin Roofs. It is manufactured in a very superior manner by being reground and carefully prepared, and is entirely available for inside finish when dark colors are desired. Its natural color is a Uniform Dark Blood Red. It is WARRENTED NOT LESS THAN 55 PER CENT METALLIC IRON, thus giving it a body excelled by no other Paint made. Its Fire Proof properties are excellent, and houses constructed of wood, and especially shingle roofs, are very materially protected by application of this Paint. It is not calcined nor burnt, consequently its color is unchangeable. We have Freight arrangements to nearly every city in the United States and Canada, and would name Prices delivered. Please read the Certificates hereto attached.

East Tennessee, Virginia & Georgia Railroad—Main Stem.
Office of General Superintendent,
Knoxville, Tenn., April 18, 1881.

S. B. Lowe, Chattanooga, Tenn.:
Dear Sir: * * * I will say that this company is using it both upon its Main Stem and Selma Division, and has found it perfectly satisfactory, and equal to any Lehigh Brown that we have used. It mixes well and spreads smoothly, and I find it much the cheapest paint that I can use for freight cars and such purposes. Very truly yours,
JNO. F. O'BRIEN, Gen'l Supt.

Wilkins, Post & Co., Engineers and Bridge Builders,
Atlanta, Ga., and 102 Broadway, N. Y.
Atlanta, May 16, 1881.

S. B. Lowe, Chattanooga:
Dear Sir: We have been using your paint on all the iron bridges that we are constructing on the M. & C., Georgia Western, and other railroads through the South, and find it of very superior quality *requiring less oil* and working with ease, and having excellent covering properties.
Respectfully, WILKINS, POST & CO.

Office of Peaslee, Gaulbert & Co., Manufacturers of
White Lead, Colors, Ready Mixed Paints, etc.,
Louisville, Ky., April 15, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Dear Sirs: * * * Your Metallic Paint has given perfect satisfaction wherever we have placed it. In grinding we find it takes from ten to twenty-five per cent less oil than various other brands of oxide of iron we have heretofore handled.
Very truly yours, PEASLEY, GAULBERT & CO.

King's Iron Bridge & Manufacturing Co.,
Cleveland, O., May 23, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Gentlemen: We find your paint of first-rate quality for our use, and very economical. Yours truly,
KING BRIDGE CO.

Office of Scott & Co.,
Manufacturers of Scott's Sheet Iron Roofing,
Cincinnati, May 4, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Gentlemen: We consider it as good as any that we have used during our experience of over nine years, and shall use it largely. Yours, etc.,
SCOTT & CO.

W. G. Hyndman & Co.,
Manufacturers of Patent Sheet Iron Roofing,
Cincinnati, May 3, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Gentlemen: The paint which we received from you last month has given us perfect satisfaction. We regard it as the best iron ore paint that we have ever used.
Respectfully yours, W. G. HYNDMAN & CO.

P. S.—Please forward us immediately two (2) tons more on our order.
Wason Car and Foundry Co.,
Chattanooga, Tenn., May 3, 1881.

S. B. Lowe, City:
Dear Sir: For some time past we have been using the Lowe Metallic Paint upon all the cars built at our shops, and, as it gives entire satisfaction to our customers, it is our purpose to continue the use of it. F. F. MORRILL, Sec'y.

Cincinnati, Hamilton & Dayton R. R. Co.,
Operating the
Dayton & Michigan, Cin'ti, Richmond & Chicago,
and C. H. & I. R. Rs.
W. H. H. Allison, Master Car-Builder.
Cincinnati, June 14, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Gentlemen: We have been using your Metallic Paint on freight cars, at our shops, for the last four months, and find it a better paint than we ever used for that purpose.
Yours respectfully, W. H. H. ALLISON.

Laboratory of Fred P. Dewey,
Chemist to Roane Iron Co.,
Chattanooga, Tenn., April 6, 1881.

S. B. Lowe, Esq.:
Dear Sir: I have given samples of your paint ore a careful analysis with a special view of ascertaining if there is any substance in it calculated to prove injurious to tin or iron roofs, and am free to say that I find it remarkably free from sulphides of every kind, or anything else that could prove injurious to either tin or iron roofs. Yours respectfully,
FRED P. DEWEY, Ph. B., Analytical Chemist

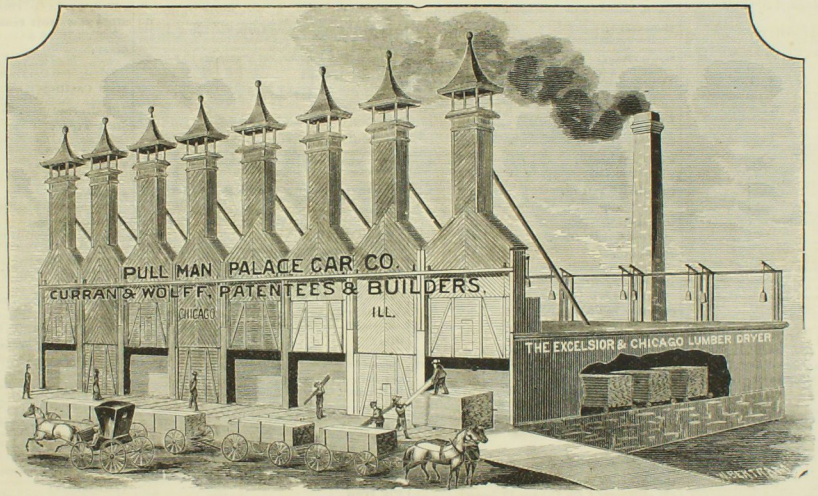
Office of Norton & Wieder,
Paints, Oils, Varnishes, Glass, Sash, Doors and Blinds,
St. Louis, May 30, 1881.

Lowe's Metallic Paint Co., Chattanooga, Tenn.:
Gentlemen: We have used and sold—in the course of the past year—enormous quantities of your Metallic Paint, and we find that less oil is required for yours than for other Metallic Paints. Yours truly, NORTON & WIEDER.

THE EXCELSIOR AND CHICAGO LUMBER DRYER is Built under 16 Patents.

PAYS FOR ITSELF EVERY YEAR.

Storing Capacity, 40,000 feet Inch Lumber.



DRYING 5,000 FEET PINE LUMBER EVERY 24 HOURS.

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C. & N. W. Railroad, Chicago	3
Flint & Pere Marquette R. R., Saginaw	1
Peninsular Car Works, Detroit	1
Michigan Car Company, Detroit	2

	No. of Dryers.
Memphis & Charleston Railroad, Memphis	1
Ohio Falls Car Company, Jeffersonville, Ind	2
Denver & Rio Grande Railway, Denver, Col	2
U. S. Rolling Stock Co., Chicago	1
Chicago, Burlington & Quincy R. R., Aurora, Ill	
Southern Car Works, Knoxville, Tenn	

	No. of Dryers.
Atchison, T. & S. Fe Railway, Topeka, Kan	1
Barney & Smith Company, Dayton, O	4
Missouri Car & Foundry Co., St. Louis	1
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AJAX METALS,

Especially Adapted for LOCOMOTIVE, CAR, ROLL-NECK and MACHINERY BEARINGS, and for Pump-Rods, Valves, Plungers, etc., for Mine Use where sulphurous water and acids are found.

LETTERS PATENT have not been taken out, so that any one using our goods runs no risk of being associated with any lawsuit. **NO INTERFERENCE** can be filed against the use of Ajax Metal on the contrary, letters of recommendation from the leading steel and iron mills, foundries and machine shops of this country are shown upon application. Also reports of tests as made by MASTER CAR-BUILDERS and MASTER MECHANICS, who are acknowledged AUTHORITY. Full information given on application to

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HOOKS BRONZE AND COMPOSITION CAR AND LOCOMOTIVE BEARINGS.

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MANUFACTURERS AND DEALERS IN RAILWAY SUPPLIES.

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C. B. Rogers & Co., Norwich, Conn xx
Rollstone Machine Co., Fitchburg, Mass ii
Witherby, Rugg & Richardson, Worcester, Mass. (cover) 4

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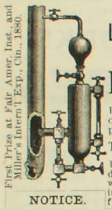

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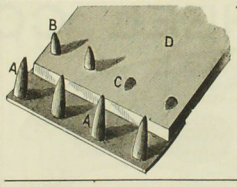

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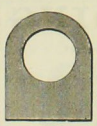

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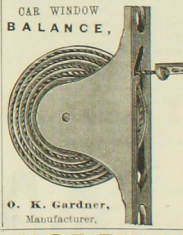

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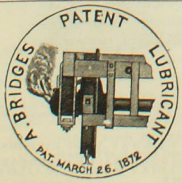

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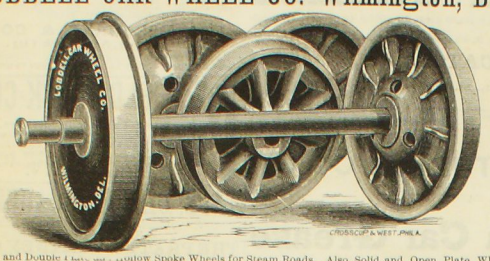

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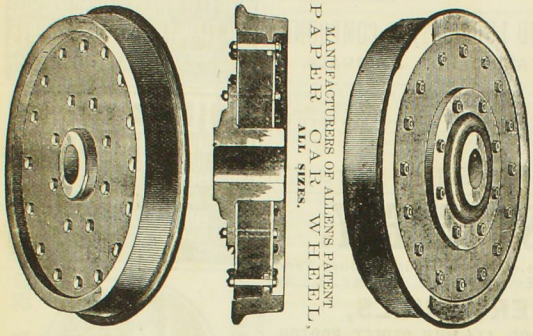

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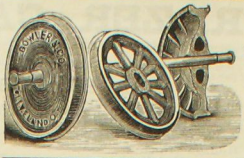

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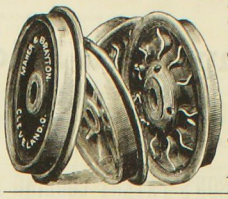

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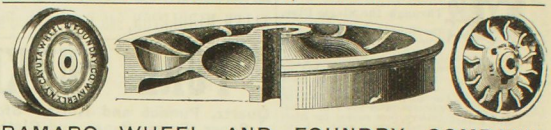

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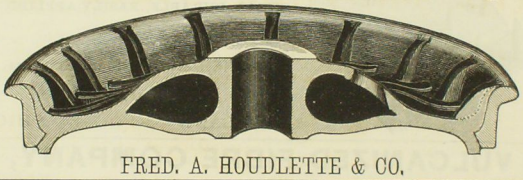

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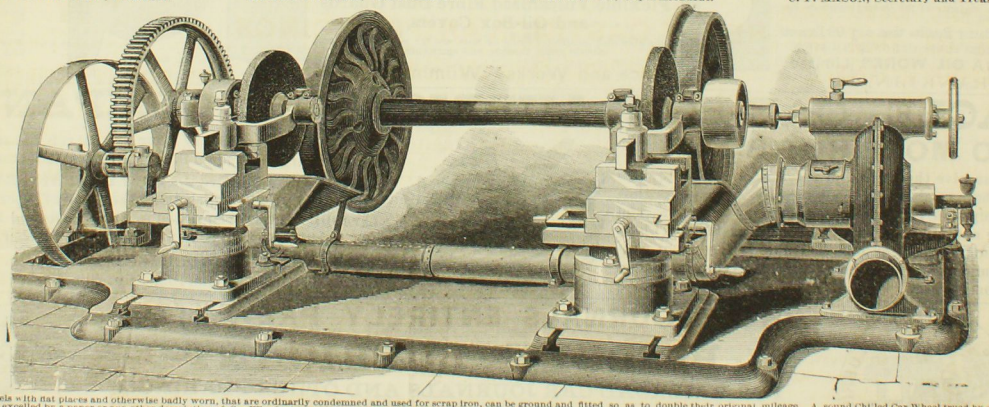

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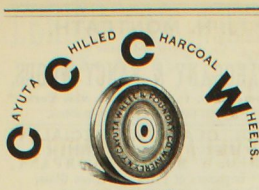

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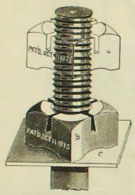

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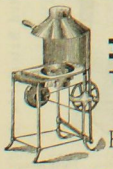

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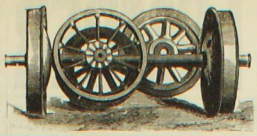

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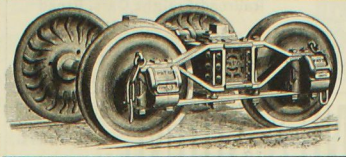

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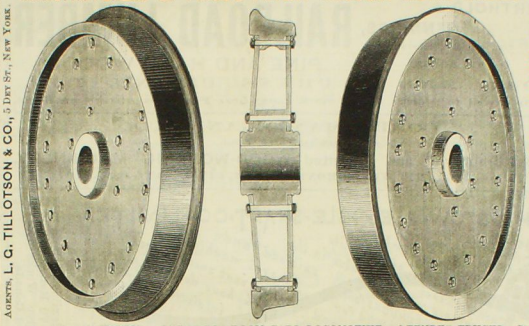

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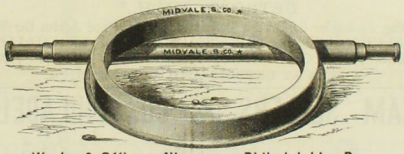

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TIRES AND AXLES OF EVERY DESCRIPTION.
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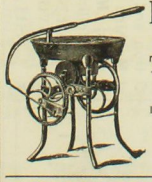

Portable Forges and Hand Blowers.

THE EMPIRE, WITHOUT BELTS. DEAD CENTER OR BACK MOTION.
THE WESTERN WITH BELTS AND LEVER HANDLE. CHEAPEST MADE.
SEND FOR CIRCULAR TO
EMPIRE PORTABLE FORGE CO.,
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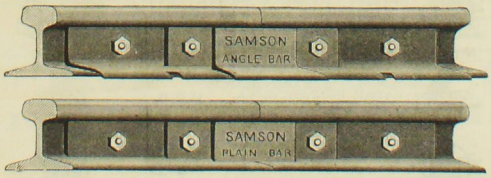
MORRIS SELLERS & CO., Sole Proprietors and Manufacturers of the Celebrated "SAMSON" BAR



And Every Variety of Plain and Angle Splice Bars.
OFFICE, 6 ASHLAND BLOCK..... Mill, Chicago Ave. and the River.....CHICAGO.

THIS HAMMER
AWARDED THE FIRST PREMIUM OF A SILVER MEDAL
AT THE
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Superior in every point to any modification of the Trip Hammer. Simple, Powerful, Efficient and Cheap. Four sizes now being built. For Prices and Descriptive Circulars, address the manufacturers,
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who are also builders of the
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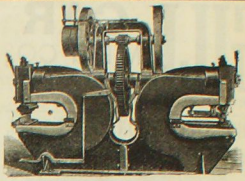

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We make over 100 sizes of Punches and Shears, Double and Single, varying from 500 to 36,000 pounds in weight, and adapted forevery variety of work. The Double machines are equal to two Single ones, as each side is worked independently. Also
ADJUSTABLE HELVE CUSHIONED HAMMERS
Of all sizes, Unequaled for Efficiency and Durability.
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HANCOCK INSPIRATOR
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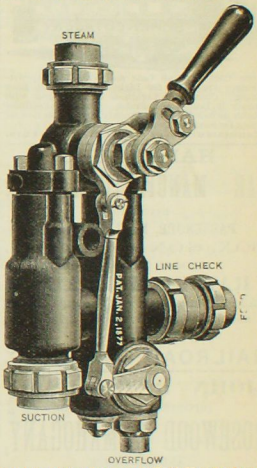

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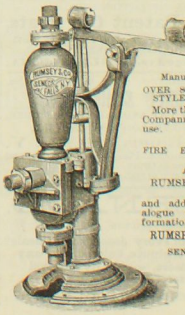

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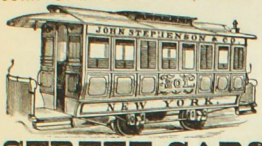

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Our Cars have all Late and Valuable Improvements. Are noted for Light Running and Easy Riding. Combining Lightness and Strength with Beauty in Design and Finish. Our large Facilities Enable us to Fill Orders Quickly and at the Lowest Prices for Superior Quality.

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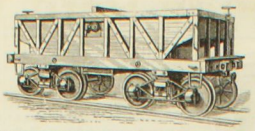

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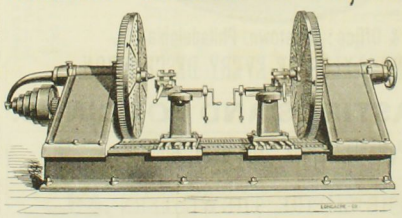

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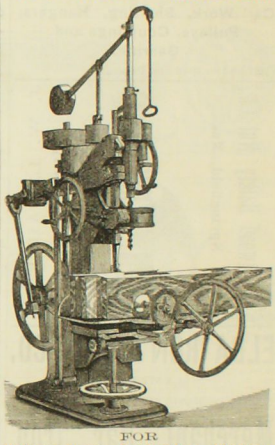

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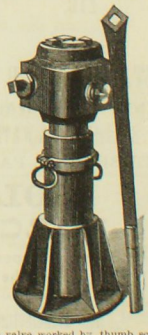

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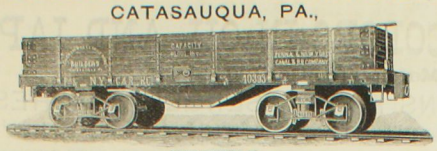

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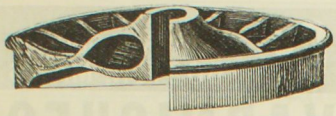

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EITHER GRAY OR BLACK,

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EITHER OF IRON OR WOOD. ALSO

FREIGHT AND STREET RAILWAY CARS,

WITH ALL DESIRABLE IMPROVEMENTS.

Manufacture Car Wheels and Castings of All Kinds.

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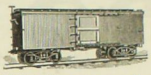
Works: Cor. Lake and Wason Sts., Cleveland, O.

PARDEE CAR WORKS.



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Mail, Baggage, Box, Gondola, Flat, Gravel, Ore, Coal, Mine and Hand Cars, Kelley's Patent Turn-Tables and Centres for Wooden Turn-Tables, Car Castings, Railroad Forgings, Rolling-Mill Castings, Bridge Bolts and Castings.

We have in connection with our Car Works an extensive Foundry and Machine Shop, and are prepared to do a general Machine Business.

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MICHIGAN CAR COMPANY,

Manufacturers of

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ESTABLISHED 1845.

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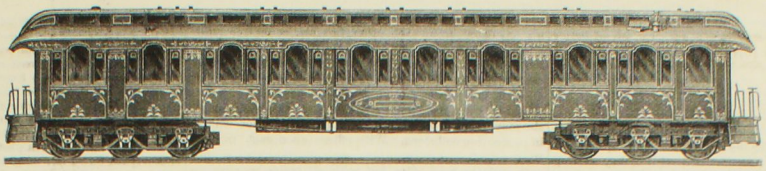
231 Broadway, NEW YORK. **MURPHY & COMPANY.** Canal and Harrison Sts., CLEVELAND, O.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XIII. NUMBER 2. | FEBRUARY, 1882. | SINGLE NUMBERS, TEN CENTS, $1.00 PER ANNUM.

Miscellaneous Items.

THE Canton Car Works, at Canton, O., will soon be ready to begin work on freight cars.

THE "locomotive works" fever of the most virulent type has broken out at Covington, Ky.

THE Rhode Island Locomotive Works are to build ten extra fast locomotives for the Grand Trunk Railway.

THE Louisville & Nashville road is receiving 200 freight cars per month from the Missouri Car & Foundry Co.

THE St. Louis & San Francisco Railroad Co. is putting the American Brake Co.'s automatic freight brake on its freight cars.

ALL passenger and freight engines of the Cincinnati, Indianapolis, St. Louis & Chicago road are being equipped with steam blow-backs.

THE Baldwin Locomotive Works built 555 locomotives in 1881. Of this number 88 were for export. About 2,800 men are now employed at the works.

MR. T. W. FREDERICKS has resigned his position as Superintendent of the Car Department of the Pardee Car and Machine Works, at Watsontown, Pa.

THE Old Colony is putting on its locomotives a spark arrester just patented by J. K. Taylor, Master Mechanic of the road; it is said to work very well.

A CAR trust company is to be organized to furnish the New York & New England with the needed equipment for its increasing business; the capital is to be $3,000,000.

FIVE new passenger cars, of the Pennsylvania Railroad standard pattern, are being built at the Wilmington shops of the Philadelphia, Wilmington & Baltimore road.

THE Eames Vacuum Brake Co., at Watertown, N. Y., have received an order from the Union Pacific road for brake equipments for 300 freight cars.

THE Gill Car Works at Columbus, Ohio, are busy upon large orders from the East Tennessee, Virginia & Georgia and Columbus, Hocking Valley & Toledo roads.

THE Pennsylvania Railroad managers have instructed their employés and subordinates that the proper thing is to say "Passenger Station" and "Freight Depot." Correct.

THE Gilbert Car Works in Buffalo, N. Y., have taken a contract to build 200 hopper-bottom coal cars, to carry 20 tons each, for the Buffalo, New York & Philadelphia road.

THE car-wheel grinding machines made by the Chilled Car-wheel Grinding Co. have lately been adopted by the Chicago, Milwaukee & St. Paul and the Canadian Pacific roads.

THE Swissvale Car Works, near Pittsburg, Pa., which have been idle for some time, have been started by the Woodruff Sleeping Car Co., which will employ about 100 men there.

THE shops of the Cheshire Railroad, at Keene, N. H., have just completed a very handsome passenger car for the road. It seats 58 passengers and is finished inside in Eastlake style.

A PHILADELPHIA paper contains the following advertisement: "Wanted—A boy about 17 years old to run a steam engine. No men need apply." This is simplifying things with a vengeance.

THE New York & New England road is building at its Norwood shops 600 8-wheel coal cars, of 20 tons capacity and with drop sides and bottoms. The road is also having 600 box cars built.

THE Atwood Safety Nut Company, of Springfield, Mass., have orders ahead for forty tons of their nuts, and are largely increasing their capacity for production to meet the growing demand for their products.

MR. HENRY HUNTER, Master of Transportation of the Virginia & Truckee road, has resigned that office to accept the position of Vice-President of the Chilled Car-Wheel Grinding Co., with office in Chicago.

THE Ohio Central road has recently received 10 new engines from the Baldwin Locomotive works. The road is also building a large number of coal cars, the average turn out being from 20 to 25 new cars per day.

THE new office of the Wabash, St. Louis & Pacific road at Indianapolis has been completed. The Wabash folks claim they have the finest office in Indianapolis, and that it has few equals in the whole western country.

THE shops of the Kentucky Central road, at Covington, Ky., are building two new baggage and mail cars, one express, 75 box, and two way cars, and have just finished 40 flat cars; 12 new locomotives have also been ordered.

THE Western Fence Co., of Chicago, have completed their contract with the Peoria, Decatur & Evansville R. R. having built over 215 miles of five-wire fence, over thirty miles of wing and over 450 gates in less than three months.

THE BALTIMORE & OHIO shops at Mount Clare, Baltimore, have just completed a passenger engine with 19 × 24-in. cylinders and 69-in. drivers. The engine weighs 45 tons. Several more of the same class are in progress.

MR. FRANKLIN D. CHILDS has resigned his position as Superintendent of the Hinckley Locomotive Works in Boston, to take charge of the new locomotive works in Chicago.

MR. JOHN M. JONES, for many years head of the car-building concern of J. M. Jones & Co., of Schenectady, died Jan. 18, at his residence in Port Schuyler, N. Y., aged 72 years. Mr. Jones was widely known and respected.

THE Old Colony managers are about putting side gates on their passenger cars as a protection and convenience to passengers. These gates are kept locked between stopping places and only opened upon the right side for passengers to get out at stations.

THE corporate name of a railway company need not necessarily include the names of the terminal points and all the intermediate cities and towns, especially if the line is a long one. Brevity in this respect would save ink, time and patience, as well as local nicknames that puzzle the uninitiated.

EARNINGS of railways in the Southern States are increasing largely. The increase last year was $4,400,470, the growth being largely net earnings, which gained from $14,673,357 to $18,124,034, or about 22 per cent. There was according a large addition to the aggregate of dividends on capital stock, the increase being at the rate of 60 per cent.

THE Pittsburg, Cincinnati & St. Louis road is building at its Dennison, Ohio, shops a lot of 12 locomotives, three of which are completed. They have 17 × 24 cylinders, and weigh 86,000 pounds. The boiler shells are of ⅜-in. steel and 22 ft. 1⅛ in. long, and have 169 2-in. flues, 12 ft. 9¾ in. long. The flue-sheets are of ½-in. steel.

THE record of railroad accidents published in the *Railroad Gazette* shows for the year 1881 a total of 1,458 accidents, 414 persons killed and 1,553 injured, being a monthly average of 122 accidents, 35 killed and 129 injured. This is a larger average than for any previous year since the record has been kept.

THE New York, Ontario & Western Railroad Co. is making a four-track tunnel through the Palisades from Weehawken to New Durham, a distance of a little less than a mile, and all the way through solid rock. A force of 900 men is at present employed, which will soon be increased to 1,500. The work will be completed in about a year.

THE United States Car Company's screw-lever dump and coal car is meeting with great favor among railway managers. The Gill Car Works, at Columbus, Ohio, are building 50 of them for the Cleveland Rolling Mills, and 30 for the Columbus, Hocking Valley & Toledo road; the Wells & French Co. are building 30 for the Joliet Steel Co., of Chicago, and 32 are being built at the Union Pacific shops at Omaha for that road.

THE Cayuta Wheel and Foundry Co., of Waverly, N. Y., have made extensive improvements to their works in the way of machinery and an extension to their foundry, and are now about to introduce electric lights for night work. They have orders that will keep the works busy for months to come.

THE Jackson & Sharp Co., of Wilmington, Del., have just completed four Wagner sleeping cars, 64 feet in length, with 6-wheel trucks; 12 more are in process of construction. The company has also completed three postal cars for the Ohio & Mississippi road. It has also received a gold medal for a car sent to the Atlanta exhibition; the car has been sold to the Florida & Western road.

THE following is the estimated new railway construction for 1881:

	Miles.
New England States	105
Middle States	402
Southern States	1,231
Northwestern States, etc	2,286
Southwestern States, etc	3,383
Pacific States	1,135
Total	8,602

THE new shops of the Chicago, St. Paul, Minneapolis & Omaha road at St. Paul, Minn., are completed, including a round-house, with stalls for 20 engines; a machine and erecting shop, 120 by 250 ft.; a smith shop, 60 by 120 ft.; a tin and copper shop, 60 by 120 ft.; engine and boiler room 54 by 60 ft., and numerous small buildings used for office, store-rooms, wash-rooms, etc. A car-shop will be added in the spring.

MR. R. C. BLACKALL, superintendent of machinery of the Albany & Susquehanna road, thinks the introduction of iron cars is inevitable sooner or later; that a supply of seasoned timber sufficient for the demand of car-builders can not be obtained, and that the timber brought from Georgia and Michigan is mostly used in an unseasoned condition; and, furthermore, as timber becomes more scarce, and consequently higher in price, iron cars will be the cheapest.

THE machine shop of the Marquette, Houghton & Ontonagon road at Marquette, Mich., has a unique tool. It is a chuck designed by Mr. H. C. Taylor, a machinist in the shop, and holds piston rings so they can be turned on the outside and on both edges before removing them from the lathe. Mr. Geo. W. Tilton, Superintendent of motive power and machinery of the Chicago & Northwestern, has three of them in use in his shops and finds them to work to his entire satisfaction.

THE Lafayette (Ind.) Car Company authorizes the following statement of its business during the year 1881:

Cars built, including 25 cabooses	2,443
Hand cars built	255
Tons of bar iron used	2,800
Tons of axles used	1,700
Car wheels used	19,544
Tons of cast iron, including wheels	8,150
Pounds of car brass	175,896
Pounds of steel springs	479,372
Feet of lumber	6,500,000
Wages paid	$199,432.00
Amount of business done	$1,108,000.00

A MINNEAPOLIS (Minn.) paper boasts that there are 17 lines of railway diverging from that city, which is fast becoming a great railway center. On six of these lines, including their several branches, there has been during the past year 2,585 miles of new construction, as against 1,478 miles in 1880. The Chicago, Milwaukee & St. Paul operates 4,075 miles, and has 184 additional miles with track laid, and 171 miles under grading contract to be completed early in the present year, making a total of 4,430 miles The St. Paul, Minnesota & Manitoba constructed 546 miles in 1881, and has 91 locomotives, 15 passenger train cars, 1,916 freight cars, and 62 stock cars. The Northern Pacific has added to its line 575 miles during the past year, and a large number of freight cars. The Chicago, St. Paul, Minnesota & Omaha now operates 1,047 miles, and has 200 additional partly graded and ironed. Its total equipment consists of 140 locomotives, 4,000 freight, 100 passenger, and 3 Pullman sleepers, and it has contracted for 25 additional locomotives, 3 sleepers, and nearly 1,500 freight cars, to be furnished during 1882.

THE Harrisburg (Pa.) Car Co. has erected a new construction shop for the building of refrigerator cars. Its dimensions are 40 × 241 ft., and it is roofed and lined on the sides with iron. In addition to the side and end windows, there are five large skylights. In one of the construction shops is a planing machine which planes four sides of a piece of timber at once; also a boring machine with adjustable augers for boring lengthwise and crosswise, working with the greatest precision and rapidity, and saving the labor of five men. The company employs about 800 men, and the weekly pay roll ranges from $5,000 to $8,000.

THE Tanite Emery Wheel Co, of Stroudsburg, Pa., have issued an 80-page illustrated catalogue containing full information in regard to the manufacture and use of

emery wheels, the utility of which is becoming more widely appreciated every year. The company carries a stock of standard goods in the principal cities of this country and the old world, and offers them at fair prices to fair buyers and careful users. The wheels are of better average quality than formerly, and being run on machines built for the purpose are used with greater safety than ever.

MR. W. B. SNOW, master car-builder of the Illinois Cenral road, uses a king-bolt having no head. It is put into the truck-bolster before the truck is put under the car. After the truck is placed under the car the bolt is put up through the iron body-bolster and fastened with a key resting upon the top of the bolster. These keys are attached to the bolster with short chains. This method prevents cutting a hole in the bottom of flat cars, which is always followed by the rotting out of the floor and the timber about the king-bolt block. It also permits the removal of the trucks under a loaded flat or box car without unloading the car or breaking the seal of a box car.

THE Pittsburg *Railway Reporter* says that the Union Switch and Signal Co., of that city, is in possession of the fact that the indicator in the city tunnel of the Pan Handle Railway showed something wrong, and the operator in the tower at the south end of the bridge notified the proper officer in time to discover a broken rail, which the track-walker failed to observe. A similar report has been sent in regarding a broken rail on the mountain division of the P. R. R. Such tell-tale inventions are of inestimable benefit to railways, and the traveling public rejoice that the above-named company find their order files full. Railway officers only ask that inventions possess merit—their adoption is sure to follow.

THERE are now running under passenger train cars of the Boston & Albany road 1,501 Washburn steel-tired car wheels, which have made the following mileage up to Jan. 18 and are still running:

2	wheels	have	run	over		500,000	miles.
38	"	"	"	between	300,000 and	400,000	"
350	"	"	"	"	200,000 "	300,000	"
628	"	"	"	"	100,000 "	200,000	"
483	"	"	"	less than		100,000	"

During the past ten years 413 wheels of the same description have been removed for defects, after having made the following mileage:

2	wheels	have	run	over		500,000	miles.
23	"	"	"	between	300,000 and	400,000	"
43	"	"	"	"	250,000 "	300,000	"
75	"	"	"	"	200,000 "	250,000	"
270	"	"	"	less than		200,000	"

Many of the last-named lot of 270 have made from 150,000 to 190,000 miles; the average for the 413 being 165,000 miles.

THE smoking cars of the Wisconsin Central road, which were built by the Ohio Falls Car Co., are made very light and cheerful by having large windows; the lower sash of each window takes a glass 24 × 24 in. and the upper one 10 × 24. The inside finish is black walnut with mahogany trimmings. The roof boards, which are laid in narrow strips, are finished on the under side; these and the finished carlines constitute the ceiling of the car. The roof is of unpainted pine, the alternate strips being darkened by shellac and all varnished. The seat and seat backs are made of alternate strips of black walnut and pine. The ends of the clear-story have large ventilators; the outside of the car is sheathed with perpendicular strips having V-grooves up to the window-sills and letter-boards. There are batten strips only at the sides of the windows, and every other pair extends down below the window-sills, making a panel under each pair of windows. The beveled corners of these battens are painted black. The body of the car is painted straw-color, and the corner boards and letter-boards a light umber. The ornamentation is in Egyptian designs.

THE formidable undertaking of straightening the track of the Pennsylvania Railroad through Bergen Hill, Jersey City, is nearly completed. It was begun nearly three years ago, the object being to get rid of two heavy curves originally made for the sake of economy, and also to secure a four-track road-bed in place of the old narrow one of two tracks. The improvement will be of great advantage by providing separate tracks for freight and passenges traffic. The great number of local and through passenger trains that have heretofore traversed the old narrow cut, with its ugly curves, required the utmost caution to avoid accidents; and the completion of the new one will be a great relief, not only in this respect, but in the saving of a vast amount of wear and tear to rolling stock. The two additional tracks are also completed to Hackensack River, a mile distant from the western extremity of the cut, at which point they will be carried over the stream by a new bridge, or rather a widening of the old one, making the four tracks continuous from Jersey City to Newark. The road-bed east of the river and through the cut is splendidly ballasted with broken stone and drained by concrete gutters. The rugged features of the excavation, wherever practicable, are replaced by smoothly sodded terraces and embankments.

THE Santa Barbara (Cal.) *Press* says that a resident of that place has patented a method of telegraphing from a moving railroad car. The invention enables each freight or passenger train to have its own telegraph office. Two wires are required instead of one, and those are suspended directly over the track and above the moving train. They are parallel, and about 18 inches apart. One wire is connected with a battery at the terminal station. They are so suspended that by a somewhat ingenious arrangement light-running wheels can run along them from one end of the road to the other. The wheels are insulated from each other, but are connected with wires that pass down the roof of the car to the operating instrument, and through it complete the circuit. As the car moves the wheels are drawn along the wires just above it, and a constant current of electricity is maintained between the initial and terminal stations, through the moving car. The great value of the invention will be in preventing collisions. With offices upon each moving train and constant, uninterrupted communication, not only with the head office, but with all trains moving on the same track, collisions would be impossible. When not in use for railroad business, the lines can be used for transmitting ordinary messages.

THE English railroads in 1880 carried 540,669,175 passengers—twenty times the population of the country. Of these passengers 32,097,645, or only six per cent., traveled first-class, 57,894,129 second class, and 450,677,401 third class. The first-class passengers, however, paid 16 per cent. of the total fares.

Two new combination cars have just been completed at the Allston shops of the Boston & Albany road. They are of a different style from any now in use on the line, and combine some of the features of the new suburban cars, adhering at the same time to the style of the standard passenger cars of the road. Like the suburbans, the interior is finished in plain cherry, except in the deck roof, where the usual head-lining is retained. The windows are single plate glass, 20×34 inches. The seats are rattan, and the trimmings of nickeled bronze, plain and neat, and of unique design. The lamps are the special feature of the interior, and were made by Williams, Page & Co. from designs furnished by Mr. Adams, the general master car-builder. They are single bracket, of a plain but well-proportioned pattern; and nickel bronzed. Instead of being placed at the sides, they are attached to the roof and project toward the center of the car, so as to make room for the shade and chimney in the deck, which not only places them out of the way, but gives a better diffusion of the light. One of the lamps is placed over the saloon, which has a glass top admitting the light. The wheels and trucks are the same as are used on the suburban cars of the road. One of the cars has the Baker ball-bearing boxes. A satisfactory trial trip has been made with them, and they will at once be put into service.

THE *American Machinist* speaks of the anomaly in railway engineering, as evinced by improved road-beds, the use of steel rails, improvements in locomotives and increased speed of passenger trains, while the weight of passenger cars, instead of being diminished, has been systematically increased, until the dead weight of a fast train of Pullman cars, exclusive of baggage cars and baggage, will probably exceed 400 pounds for each passenger carried—an enormous weight, which the writer thinks must result in fewer passengers at higher fares, or else lighter cars made of steel. The "400 pounds" may be a misprint. At all events it is an estimate wide of the mark. The average weight of Pullman sleeping and drawing-room cars is not less than 60,000 pounds, while some of them very much exceed this figure. We have no means of determining with accuracy the average number of passengers carried to a car; but, all things considered, we should say that 20 was a fair estimate, including the two classes of cars named. This would give 3,000 pounds of dead weight for each passenger, which cannot be very far from the truth. An ordinary 20-ton passenger coach, seating from 55 to 60 passengers, taxes the motive power with a dead weight approximating 700 pounds for each person carried, and more than that, unless the seats are all occupied. These considerations make the "anomaly" spoken of more manifest and palpable.

THE new car shop of the Wabash, St. Louis & Pacific road, at Decatur, Ill., is 50 × 200 ft. in dimension, and about 100 men are employed in it. The new blacksmith shop at Springfield is 65 × 310 ft., with a capacity for 43 fires and 2 furnaces. The Springfield shops have the care of 170 locomotives, 8 of which are undergoing repairs, and two new ones have just been completed. Mr. Johann, the master mechanic, was one of the first to adopt a system of uniformity in the parts of engines. Since 1874 he has reduced the many different patterns to a few standards, 13 patterns of cross-heads, for example, to two standards, 6 check-valves to one, 15 journal boxes to two, 3 sizes of hose to one, and 26 different springs to one length and two widths, thus making but two standard springs. His standard crown-sheet for boiler, slopes one inch to the foot from the flue-sheet and is arched from side to side, rising 3 inches at the center. It has only 3 thimbles or washers under the first crown-bar, 2 under the second, 3 under the third, 2 under the fourth, and so on, alternating two or three to each bar. Six inches clear water space is left in bottom of boiler. Old boilers steam just as well with two rows of flues left out at the bottom. He gives valves 5½-in. travel, ¾-in. outside and no inside lap; $\frac{1}{16}$-in. lead for passenger and $\frac{1}{8}$ for freight engines. These shops have a new milling machine, designed by Mr. Krutz of the Buckeye Iron and Brass Works, Dayton, O. It is more convenient and economical than other machines of the kind, and has an attachment for milling the wrist-pins of cross-heads.

Specifications for Locomotive Tender Truck—Wabash, St. Louis & Pacific Railway.

(*See Drawings, page 4.*)

General Description.—Total wheel base, 14 ft.; spread of truck wheels, 4 ft.; distance between centers of trucks, 10 ft.; center of front truck, 57 in. from front end of frame; center of back truck 51 in. from back end of frame, tender being center bearing on front truck and side bearing on back truck.

Tank.—Of No. 7 tank steel, with a capacity of 3,000 gallons; riveted with $\frac{7}{16}$ in. rivets spaced 1½ in. apart. Length over all, 17 ft. 4 in.; width 8 ft. 3, in.; height, 42 in.; length of tank back of coal space, 8 ft. 1 in.; wings tapering from 20 in. in front to 26¾ in. at back end, back of coal space being round with a radius of 22¾ in.

Bracing.—Sides of tank stiffened by 8 vertical T irons on each side, 3 on back, and 4 on each side of coal space, the ends of the T irons being shaped to extend over the upper and lower corner angle irons, the top and bottom to be stiffened by two long T irons running longitudinally, with vertical stays between the irons at three places, the corners being stiffened by wrought-iron angle plates, riveted to the T irons.

Water Chambers.—Tank is supplied with two water chambers, one bolted underneath the forward end of each wing. These chambers contain the strainers and tank-valve seats, and very materially facilitate the perfect working of the injectors by preventing the breaking of the water supply caused by the swashing of the water in the tank when it is very low, as they will always be full of water.

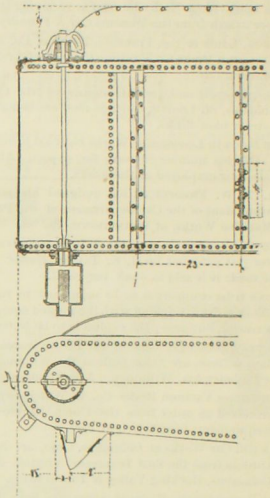


Fig. 1.

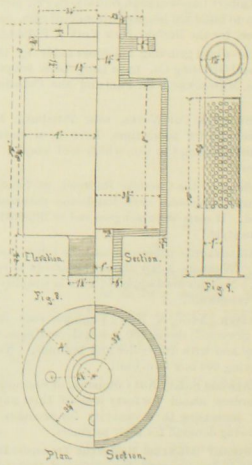


Fig. 2.

Fig. 1 shows the position of the chamber under the tank, and Fig. 2 shows reduced copies of the working drawings for its construction, with the strainer at the right.

Lining.—Top of tank over coal space lined with 1½ in. oak plank, with a 12-in. plank running down each side of the tank wing in the coal space, substantially secured with iron straps and bolts, to protect the tank from injury by dumping in coal from chutes.

Tender Frame.—Of hard wood 19 ft. long and 8 ft. 3 in. wide, having six longitudinal timbers or stringers 4½ in. wide and 10 in. deep, with a front sill of 4½ in. by 10 in., and back sill 8 by 12 in., all framed and bolted together, with wrought-iron angle plates at the corners.

The frame has two wrought-iron transverse bolster plates, 18 in. wide and 3 in. thick, immediately over each center plate; one extending over the top of the six stringers and lapping over at the ends; the other extending underneath the four center stringers, from each end of which two long truss bolts extend up through the outside stringers and the lapped over ends of the upper plates, these plates being securely bolted to the stringers. Frame has a bumper timber securely bolted to front sill, 6 in. wide at the center, 4½ in. wide at the ends and 8 in. deep. Front draw-head of cast iron, placed inside of front sill between the two center stringers, to which it is securely bolted. Rear draw-head of cast iron, secured to frame by four 1¼-in. rods, which extend through frame and front bumper.

Two of these rods secure a cast-iron chafing piece to the bumper. In addition, there are two long 1-in. rods along the inside of the outside stringers, running the entire length of frame, together with two 3 by 1-in. transverse bars, across the bottom of the stringers at the center, and to which they are securely bolted.

Tender Trucks.—Are four-wheeled center-bearing trucks, with extra side-bearings on back truck.

Center Bearings.—Of cast iron; bearings, 12 in. in diameter, secured to bolsters by four 1-in. bolts.

Bolsters.—Of oak, 12 in. wide and 12 in. deep; 94 in. in length over all, with cast-iron caps on the ends.

Frame-Bars.—Upper frame-bars of wrought iron 4 in. wide, 1¼ in. thick, and 67½ in. long; lower frame bars of wrought iron 4 in. wide, 1 in. thick, and 67½ in. long.

Pedestals.—Of cast iron, with chilled wearing faces, 12 in. long by 5 in. wide, spaced 7 in. apart; bolted to upper and lower frame-bars by one long 1-in. bolt running through pedestal and both bars, and by one extra bolt in both upper and lower bars. Pedestal wearing faces not planed.

Springs.—Of best cast steel, tempered in oil, two for each truck, with fourteen ⅝-in. leaves, 49½ in. long over all. Springs secured by a 1⅜-in. pin passing through a lug on spring band, and a cast-iron saddle, which is secured to bolster by six 1-in. bolts, two of which pass through the upper and lower frame bars; the bolsters being trussed on each side by two 1-in. rods, the ends of which pass through lugs cast on the spring saddle. The ends of the springs bear upon the ends of a 4-in. by ⅜-in. bar, which binds the spring pockets together; the spring pockets resting on projections on the boxes, which extend upwards on each side of the frame bars.

Boxes.—Of cast iron, with a chilled wearing surface on each side of 5 in. by 9 in., with 1¼-in. flanges extending over the sides of the pedestals. Boxes not planed.

Brasses.—Solid; 6¾ in. long and 1⅜ in. thick through the crown.

Axles.—Of hammered wrought iron, and of the Master Car-Builders' standard. Dimensions: 6 ft. 11¼ in. long over all; 6 ft. 3 in. from center to center of journals; wheel seat, 4⅞ in. in diameter, by 7 in. in length; distance between outsides of hubs, 5 ft. 3 in.; journals, outside bearing, 7 in. long by 3¾ in. in diameter; diameter of axle at center, 4 in.

Wheels.—Chilled double plate, 33 in. in diameter. Both trucks being duplicates of each other, with the exception of extra side bearings on back truck.

Tool Boxes.—Tenders have a substantial tool box on tender frame, in the rear of the tank, and also two tool boxes bound with iron, one on top of each tank wing

Brake Attachment.—Engine and tender fully equipped with Westinghouse Automatic Brake. Brakes attached to both trucks of tender with a hand brake connection with them.

JACOB JOHANN, Springfield, Ill.

Car-Builders' Monthly Meeting for December—Chilled Iron Car Wheels.

(In Continuation.)

Mr. Scoville said it was easy for the wheel makers to say what size of chill they used. He used 33-inch chills.

Mr. Snow said his chills were all turned 33½ inches. The shrinkage in most charcoal iron that was used was ½ an inch in 33. He knew of but one wheel maker in the country that made a wheel plum 33 inches. The others ranged from 32⅞ to 32¾. A 33-inch wheel could not be made with a 33-inch chill. The chill for such a wheel should be 33½ inches. The harder the iron the more the wheel shrinks. The temperature of pouring has very little to do with it.

The question was then raised as to uniformity of diameter, and the variations in rules and steel squares used in making measurements. Nothing had been done in this respect but to request wheel makers to appoint some one to furnish templets for all, to be used in determining the diameter of chills. It was suggested by Mr. Forney that accuracy in measurements could only be secured by buying a standard rule from a standard manufacturer like Brown & Sharp. In this way accuracy could be attained to within a hundredth of an inch. Pratt & Whitney were constructing two of the most accurate measuring machines ever made in the world, and by using standards so furnished, there would be little reason for complaints about variation in measuring rules.

CONING OF WHEELS.

Mr. Snow said that when the Krupp steel wheels were first introduced in this country, they were coned about ¼ of an inch in 4 inches, but they were so fast on the tread, and the flanges got so sharp, that the coning was increased to $\frac{3}{16}$ in 4 inches, after which the wheels did much better service, both under locomotives and cars. Locomotive driving-wheel tires were coned much more than formerly.

Mr. Garey had noticed a number of steel-tired wheels that were removed from cars because they were very badly flanged. If the coning was to relieve the flange, why were these flanges so badly worn?

Mr. Blackall replied that it was because the coning wore down.

Mr. Terrell had come to the conclusion that coning was a detriment to both wheels and rails. It had a tendency to wear out the chills. What was the use of having 3½-inch treads if only one inch of it was to be used? He had had wheels come back worn out at the throat of the wheel, but with $\frac{1}{16}$ inch coning they wore much better. His own experience was that wheels run a great deal better with perfectly straight treads.

Mr. Gill thought flange wear was due more to the construction of trucks and bad condition of trucks than to any thing else. He had noticed that in a great majority of cases where wheels were flange worn, the wear was on one wheel of the axle and two wheels of the truck, and that these latter were always diagonal in their relative position.s He thought the wheel on one end of an axle would compensate the opposite one in the matter of wear, if both were properly sized. He also was of the opinion that wheels on the same axle wore more nearly alike with wide truck bolsters than with narrow ones.

Mr. Adams concurred with the views of Mr. Gill, and called attention to another point—the driving of wheels on the axles. They were often pressed on unequally, varying ⅛ or ¾ inch, causing the truck to work round, and this caused flange wear. Trucks, also, were often made of green timber that would warp and shrink. He had seen no evidence that the fault was in the coning, and without coning he could not see how one wheel could have any advantage over another in going round curves.

Mr. Scoville suggested that if coning was the cause of sharp flanges, then sharp flanges should be the rule and not the exception: whereas, they were most decidedly the exception. If some wheels were coned ¼ and some ⅛ of an inch in 4 inches, was there any perceptible difference in the flange wear?

Mr. Blackall said that he had some Mogul pony-truck engines with Krupp steel tired wheels, the flanges of which got so sharp that he had to turn them. On this account he thought he would rather have a chilled wheel, but he was told to cone them, and after doing so had no more trouble provided the coning was kept right. He thought the oncing was about ¾ inch in 4 inches.

Mr. Snow said his standard was $\frac{3}{16}$ in 4 inches, and he would increase rather than reduce it. It helped in going round curves; and on straight track, if there was a considerable cone in the treads, the rail rarely touches the flanges.

Mr. Adams said the Boston & Albany had used steel-tired wheels under its passenger cars for ten years. There was of course some flange wear, which he considered mainly owing to the fact that some wheels were driven on a little more at one end of the axle than at the other. It had never occurred to him that making the treads flat would remedy the difficulty. Some wheels were made of softer metal than others, and these would wear faster and so become smaller and run to the flange; but if the wheels were carefully matched in size and density of metal there would be very little trouble. The steel wheels had worked so well that the road would continue to use them. Trucks were liable to get out of square from various causes—green timber, overloading, etc. In flange-worn wheels, he had always noticed there was a difference in the distance from the shoulder to the journal and the hub of the wheel. If he were to make any change in the coning he would make it more instead of less.

Mr. Terrell said in regard to the wheels of horse cars, that the less coning there was the better they ran, and it was also a great deal better for the rails.

As for the chill of this class of wheels, he did not let the lightest of them go out of the shop with less than ⅝ chill, and some of the wheels had an inch even. This was necessary, or they would be liable to break at every corner. The flatter the treads the longer the wheel lasted.

Mr. Garey said there was no question but a wheel could be coned so that the flange would seldom strike the rail, but the question was whether the car would ride easier. His experience was that a flat wheel made easier riding than a coned wheel, but he was of the opinion that coning was a disadvantage to both wheel and track. The question was, however, are the wheels of to-day heavy enough for

CARRYING TWENTY-TON LOADS.

Mr. Adams asked how this was to be determined. It would by necessary to ascertain whether the proportion of broken wheels was greater now than it was five years ago.

Mr. Garey did not think the twenty-ton cars had been running long enough to determine the matter. Wheels lasted none too long under ten-ton cars, and obviously they would wear out quicker with the weight on them double. Under ten-ton cars he claimed three years service, or 60,000 miles. Line cars averaged perhaps a little more than that.

Mr. Adams thought that in estimating milage of wheels, the fact was overlooked that many of the cars, line cars particularly, were running light. Another fact was that, since power brakes were introduced, wheels made less mileage then they did before. Statements were made in the newspapers that the passenger car wheels of this, that and the other road, made 50,000, 60,000, 70,000 miles, but he did not believe it. He kept an exact account of the mileage of every wheel under the Boston & Albany passenger cars, and the best average he had been able to get out of iron wheels was 40,000 miles a year. The wheels were removed for various causes; some were flattened, some flange-worn, and some worn out.

Mr. Garey thought it made some difference whether the line of road was a long or a short one. The Lake Shore road had a method of keeping mileage that was very accurate. Each wheel of passenger cars was marked and numbered and a record kept of date of putting under and removal, and he believed some of the wheels had made fully 50,000 miles—but the line was 500 instead of 200 miles long.

The discussion here straggled away from "Carrying 20-ton Loads," in the course of which various collateral matters were lightly touched upon, when the President called attention to the

WIDTH OF WHEELS.

Mr. Garey said this was a matter of some moment—the width over all, or from outside of flange to outside of tread. The Pennsylvania and some other roads were raising the question, and it appeared that there really was no standard, unless it was 5½ inches. But out of thirteen manufacturers he found there were only four who adhered to this width. There are 5⅜, $5\frac{7}{16}$, $5\frac{9}{16}$, 5¼, 5⅜ and $5\frac{11}{16}$. Western wheels are generally well up to the standard.

Mr. Adams said, in reference to the Pennsylvania road, that certain New England cars had been refused by that road on account of wheels not fitting the track gauge. A steel wheel gauge was obtained at Altoona, made by their own men, and upon measuring their own wheels with it, there were found to be three different sizes of them under their own cars. He didn't know how any body was going to make wheels to fit such a road as that.

The meeting then adjourned.

RULES FOR INTERCHANGE OF FREIGHT CARS.

At the January meeting, held at the rooms of the Association on the 19th ult., the subject was: The Rules Governing the Interchange of Freight Cars and Settlements for Repairs and for Cars Destroyed on Foreign Roads. Among the car-builders present were Messrs. L. Garey, F. D. Adams, C. A. Smith, J. W. Marden, John S. Lentz, and others.

The first point considered was the expediency of a change in Rule 17, so as to provide that in case the body of a car is destroyed, and the trucks belonging to it remaining uninjured or only slightly injured, the road on which the injury occurred shall have the privilege of returning such trucks to the road owning the car, instead of paying for them as provided in the rule. The subject was very fully discussed, the tenor of what was said being in favor of letting the rule stand as it is, although in some cases it might work apparent hardship.

Mr. Marden's practice in such cases had been to repair trucks injured on his road and send them home, unless he could use them under his own cars. If the repairing was not satisfactory to the owners, they were authorized by him to make such alterations as they desired, and he would pay the bill. It was a matter which he thought could be arranged between the parties, independently of the rule. Still, there were some objections to a rigid rule requiring parties to pay for trucks, and one was, that some interchange cars had poor trucks, which the owners were glad to get rid of. Such cars should not be allowed to leave the home road until they were put in good condition. He thought the rule was better as it now is, than it would be if attempts were made to change it.

Mr. Lentz thought it was unjust to compel parties who broke car bodies to keep the trucks, when the owners of the car could certainly use the trucks to better advantage than any one else. His own road, under the operation of such a rule, would be over-stocked with foreign trucks in one year, the most of which he could probably never use. He was entirely willing in such cases to have the trucks of his own cars put in good order and returned to him.

Mr. Adams was opposed to making any change in the rule. He was willing to receive back his own trucks when his cars were injured on other roads, provided they were returned free of expense. The Boston & Albany trucks were nearly all iron ones, and easily repaired. They would last 25 years and wear out two car bodies.

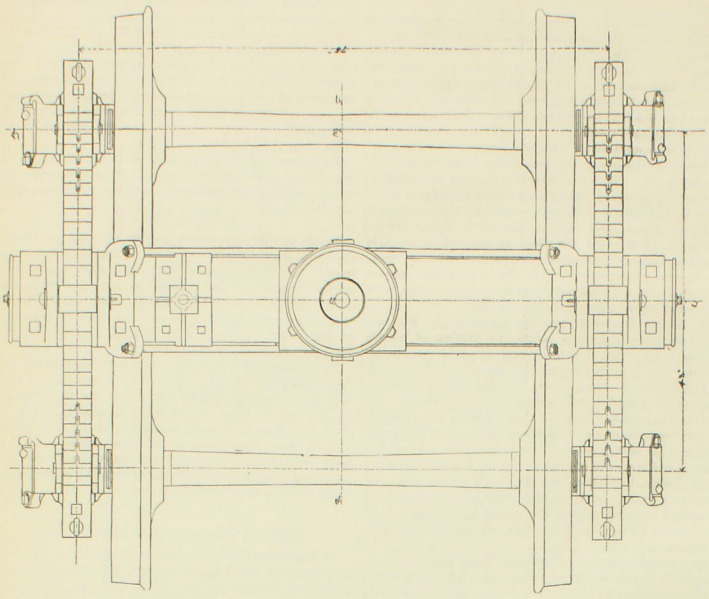
Mr. L. Garey wished to put himself on record as approving the rule as it stands.

The next question considered was the renewal of wheels. A loose wheel can seldom or never be fitted to the same axle unless shimming, prick-punching, or some special device is resorted to, aside from regular hydraulic pressure, and these devices are strictly prohibited. The question was whether when two new wheels are put on an axle in order to secure a fit, only one of the old ones being loose, the owner of the car should pay for both wheels, less value of old ones as scrap; and whether a new axle, if supplied, should be paid for in like manner by the owners of the car.

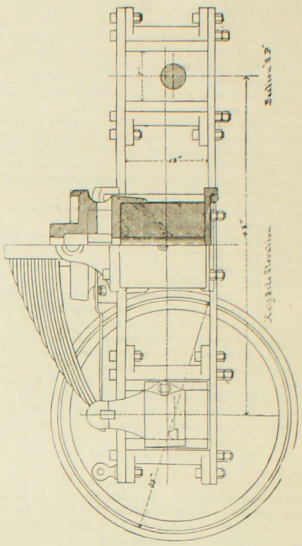
Mr. Adams thought that in such case the tight wheel should not be considered as scrap. His way would be to pick out an axle with a larger wheel seat, and put that in t a charge of $2 for the change. In case of a loose wheel

LOCOMOTIVE TENDER TRUCK—WABASH, ST. LOUIS & PACIFIC RAILWAY.

(See Specifications, page 14.)

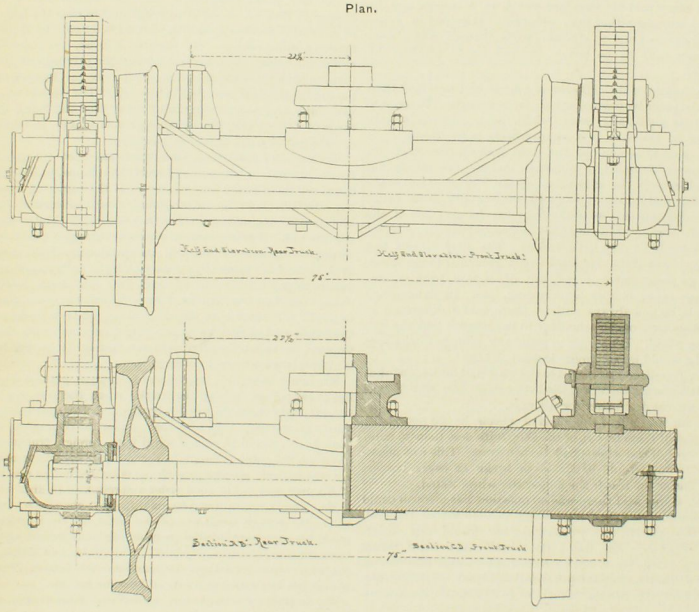


Rear Truck. Front Truck.



Half Side Elevation.

Plan.



End Elevations and Sections—Front and Rear Trucks.

on M. C. B. standard axles, he would replace it by another that would fit, and as nearly equal in quality as he could find. But it would not be fair to make scrap of the wheel taken off, and then charge $9 for the one put on.

Mr. Marden did not believe in enlarging the wheel seat of the standard axle. If he should find two loose wheels on one of these axles, and could not manage in any other way, he would take two good second-hand wheels, put them on and let the car go; but rather than turn a new axle to fit the wheels taken off he would rather put them into scrap.

Mr. Garey thought the rule very clear. It says: "Two loose wheels fitted on second-hand axle, or per pair, $2." It was a very simple thing, when a loose wheel was found, to pull both wheels off the axle and fit it with two second-hand ones, leaving in their place the two wheels taken off; so that a party with the one loose wheel on his hands would lose nothing except the labor in excess of the $2 charged.

Mr. Lentz called the attention of the meeting to the following case in his experience: One of the cars of his road, having phosphor-bronze journal bearings, was broken up on another road, which he furnished with same kind of bearings to make the repairs, charging for them 35 cents a pound. The parties demurred to the price, claiming that under the rule only 20 cents should be charged. The discussion upon this showed that Rule 16 refers to *brass* bearings only making no provision for any other; but inasmuch as phosphor-bronze was an entirely different and more valuable article, it was but just and fair that the parties breaking the car in the case cited should furnish the same kind of bearings as were in the car originally.

Mr. Garey said it was the manifest intention of the rule to include all kinds of bearings, and not brass ones exclusively. But cases were liable to occur that were not covered by the rules, such as the loss of bearings not worn out in actual service, or lost by accident, and such cases should be arranged between the parties irrespective of the rules.

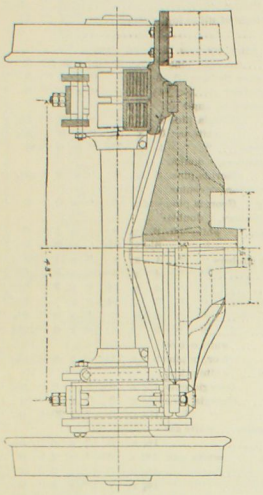
The discussion was continued in reference to the different kinds of journal bearings, malleable and cast-iron draw bars, brake-shoes, etc. The impression seemed to be that the general understanding of the rule was that, in making repairs, the same materials should be used, as far as practicable, as are used by the road owning the cars; but as regards the prices to be charged under all circumstances for materials furnished by the owners of cars, there was considerable diversity of opinion.

The splicing of intermediate and center timbers was then considered, and it was agreed that cars with spliced timbers should be kept on the lines to which they belong, and not offered for interchange. There were also some remarks made about the "card" system, which we omit. The discussion being merely an interchange of views of the members present, preparatory to more definite action when the Rules come up for annual revision in June next, we have only given an outline of what was said.

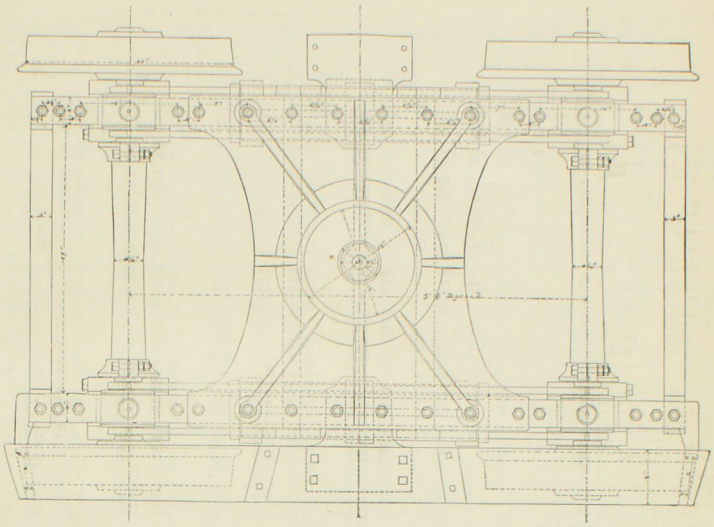
Mr. Garey said that 46 roads, owning 320,000 cars, had adopted the Rules, and were working under them; and that 23 roads, owning 53,000 cars, were also working under them, although they had not formally signified their adoption of the rules—making 373,000 cars in all.

A BILL has been introduced in the Legislature of Iowa, prohibiting railway corporations operating railways in that State from issuing free passes, or permission in any form, for the free transportation of persons or property, to any legislative, executive or judicial officer, either Federal or State; or to any person holding a township, county or municipal office, or serving as juror, or as officer of any court within the State; or to any one to be used in going to and from political conventions. The bill also makes it unlawful for such persons to use such passes or tickets, or for any conductor or other person in charge of trains to permit such persons or property to be transported without the payment of lawful fare. The penalty for violation of the act to be a fine of not less than $50 nor more than $100. And the bill provides further, that when the law takes effect passenger fares on roads within the State shall be reduced ½ cent per mile below the rates now fixed by law.

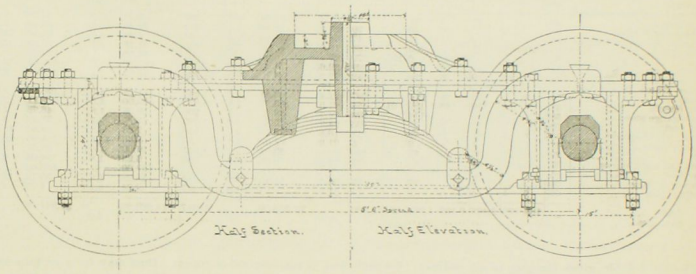
LOCOMOTIVE TRUCK—WABASH, ST. LOUIS & PACIFIC RAILWAY.



End View—Half Section, Half Elevation.



Plan.



Side Elevation.

THE drawings show the construction of the truck of passenger engine No. 152, of the Wabash, St. Louis and Pacific Railway, of which we gave a full-page engraving in our last issue, and also specifications of truck.

The wheel base is 5 ft. 6 in.; outside to outside of frame-bars, 47 in.; center bearing, 16 in. in diameter, combined with cast-iron bolster; upper frame-bars, 94¼ in. long, 4 in. wide and 1½ in. thick, lower ones, 85½×4×¾ in.; pedestals, 14×4×1½, with cast-iron shoes; 4 springs 33¾ in.; 4 equalizing bars; boxes of cast-iron with solid brasses; steel axles, 67⅝ in. long and 4¼ in. diameter at center; 30-inch chilled wheels and 2 safety chains.

Improved Steel Tire Car Wecels.

Mr. L. W. Washburn, of Allston, Mass., is the inventor of a mold and process for casting steel tire car wheels that is of late attracting considerable attention. The object of this invention is to cast weeels of two distinct metals in such manner that the difficulty experienced by wheel makers from unequal contraction is entirely obviated. The operation consists in first casting the center or body of the wheel from anthracite iron. While this part of the wheel is assuming a semi-molten state and slowly shrinking, a metallic ring, forming the outside periphery or tread of the body portion, is removed, and another metallic ring of larger inside diameter, having a small fire cope attached, substituted therefor, after which crucible steel, sufficiently high in carbon as to render its running perfectly solid, is cast through the small fire cope, striking the upper outside edge of the still white hot center or body, and partially remelting it, thereby enabling the cast steel tire to thoroughly unite with the soft iron center, completing a wheel that must of necessity shrink from the center or hub, thus preventing any liability of cracking from unequal contraction. Were it not for the difference in grain and color, it would be an utter impossibility to detect the line of union between the two metals. These wheels have already made a record of 100,000 miles before the first turning, between Boston and Chicago, under Wagner sleeping cars, and are guaranteed to run 200,000 miles. Owing to its composition, this wheel can be made at a great deal less expense than the steel wheels, while it answers the same requirements. They are now made in Canada, but arrangements are being completed for their manufacture in the United States.

Automatic Couplers for Freight Cars.

The annual report of the railroad commissioners of Connecticut discusses the expediency of providing by law for the adoption of an automatic coupling for freight cars by the railway companies of that State. Inquiries as to whether such a coupler is the best preventive of accidents in handling freight cars, and whether a coupler of this kind has yet been devised so perfect as to justify its compulsory adoption, have received affirmative answers from various sources, and the report concludes with the following recommendation:

"We would, therefore, recommend the enactment of a law requiring that all freight cars hereafter bought or built by the corporations operating railroads in this State shall be equipped with automatic couplers, the draw-bars of which shall be of the uniform height which has been recommended by the master car-builders, and with dead-blocks sufficiently thick to give not less than one foot clear space between the cars when the blocks come together, and that similar draw-bars and couplers should be made use of in all renewals. If it is objected that this is a half way measure, we answer that is just what it is intended to be. To require our companies to substitute at once automatic couplers for those now in use on their more than eight thousand freight cars would, in our judgment, be imposing an unreasonable burden of expense.

"If it is thought best to provide additional protection in the use of old cars, there may be adopted some such device as was shown us for a bar pivoted on a revolving collar, to be attached to the end of a car, and long enough to reach from the side of the car under the draw-bar to raise and direct the link without taking hold of it with the hand; or, in other words, to be a substitute for the 'stick' always in place and ready for use."

The Flowers Sleeping Car.

This car is made in the ordinary form, except that the seats are placed in the middle instead of at the sides, thus leaving an aisle on each side of good width, instead of one in the center. The seats are of desirable length and arranged like those in any sleeping car, in sections, facing each other. Lengthwise of the car runs a partition as high as the back of the seats, so dividing them that each section has room for four persons. Every six feet in the car, at a corner of seat and partition, a grooved post runs from the floor to the top of the monitor in which the partition slides. This partition, when it is desired to make up berths, is drawn up, and folding leaves upholstered as beds, or the cushions on the backs of seats and on the seats are so arranged as to form a mattress for the lower berths. Another partition, which during the day is drawn up into the monitor roof of the car, is lowered at night, and folding leaves form the mattress for the upper berths, and are let down upon short partitions drawn up from between the backs of the seats, while other leaves, hung like doors, swing out to close the ends from the next section. Thus each berth for two persons is entirely closed at the sides and ends, leaving a space of more than four feet between the upper and lower berths and leaving open only the side next the aisle, and this is protected by curtains. The company's manufactory is at Bangor, Me.

A New Car Journal Box.

Wendell's car journal box was shown in various forms and was described by Mr. C. Henry Roney, C. E., at the last meeting of the Franklin Institute. In cars and locomotive engines the weight of the vehicle rests upon the axle, and the lubricator of the latter, to be effective, should be on the top of the journal. In the ordinary box cotton waste saturated with oil is employed as a stuffing, so that the oil may be carried up by capillary attraction to the journal. It answers the purpose only imperfectly, however, sometimes collecting dust on its surface, and sometimes dropping away and leaving the journal without lubrication and exposed to the dangers of heating. In the box invented by Mr. Wendell no stuffing is employed, but in place thereof there is a small force pump with ball valves, operated by the vertical motion of the car on its truck. The oil is thus automatically pumped from the bottom of the box to the top of the bearings, through which are openings carrying it direct to the top of the journal, whence it falls to the bottom of the box. A leather or cork shoulder packing is used to prevent the escape of oil or the admission of dust. The boxes are made in three forms—one for steam railway cars, one for street cars, and one as an attachment to be put in place of the door or lid on boxes now in use. The inventor claims a very great savings in brasses and lubricants by the use of this box.—*Iron Age.*

DETAILED COST OF A PASSENGER LOCOMOTIVE.

Specifications.		Labor.										Material.			Material and Labor.	
		See explanation.														
Name.	No.	1.	2.	3.	4.	5.	6.	Total hours	Average rate.	Total cost.	Cost per lb	Rough weight. lbs.	Total cost.	Cost per lb	Total cost.	Cost per lb
Boiler	1	35	71	528	726	978	104	2,442	21.6	$527.33	2.5	21,085	$1,322.37	6.3	$1,849.70	8.8
Grate	2	5	...	15	...	30	...	50	21.0	10.49	1.5	710	14.73	2.1	25.22	3.6
Frame	3	11	22	135	253	67	...	488	21.5	105.17	2.2	4,866	530.44	10.9	635.61	13.1
Cylinders with bolts and studs	4	...	30	55	105	365	...	555	23.7	131.56	2.2	5,896	307.60	5.2	439.16	7.4
Cylinder heads and casing	5	...	...	2	46	37	...	85	24.4	20.73	1.7	1,219	25.60	2.1	46.33	3.8
Steam chests, covers, bolts and studs	6	5	11	7	...	54	...	77	21.5	16.55	2.0	819	19.40	2.4	35.95	4.4
Guides	7	...	15	30	111	192	...	348	21.2	73.87	7.4	992	61.98	6.2	135.85	13.6
Guide yokes	8	...	...	51	35	33	...	118	20.9	24.63	4.2	585	85.25	14.6	109.88	18.8
Cross heads	9	...	22	...	58	23	...	101	21.3	21.44	6.3	338	7.36	2.2	28.80	8.5
Pistons and rods	10	6	10	19	55	35	...	125	21.2	26.46	3.3	780	27.70	3.5	54.16	6.8
Slide valves	11	2	...	...	21	15	...	38	21.5	9.18	4.6	198	4.16	2.1	13.34	6.7
Valve rods	12	...	1	18	7	26	...	52	22.0	11.43	10.0	114	1.71	1.5	13.14	11.5
Valve yokes	13	...	2	15	14	14	10	55	24.0	13.46	12.2	110	3.40	3.1	16.86	15.3
Main and parallel rods	14	...	31	167	36	474	...	708	22.5	160.26	12.8	1,250	115.13	9.2	275.39	22.0
Driving wheels, axles and tires	15	1	...	11	8	139	1	160	24.3	38.82	0.3	15,014	632.38	4.2	671.20	4.5
Driving boxes and cellars	16	...	...	24	24	95	...	143	23.1	33.08	3.9	852	45.88	5.4	78.96	9.3
Equalizers	17	...	7	67	18	38	37	167	21.3	37.90	8.0	470	7.10	1.5	45.00	9.5
Spring hangers	18	...	...	19	...	38	...	57	23.2	13.21	8.3	160	3.06	1.9	16.27	10.2
Driving springs	19	...	...	24	...	24	...	48	26.3	12.11	3.0	405	20.13	5.0	32.24	8.0
Driving spring saddles	20	...	...	...	1	...	...	1	17.0	.17	0.1	156	18.72	12.0	18.89	12.1
Pedestal wedges	21	2	1	17	1	...	...	21	15.5	3.24	1.5	215	4.49	2.1	7.73	3.6
Pedestal shoes	22	...	...	10	1	...	...	11	16.0	1.74	1.0	168	3.52	2.1	5.26	3.1
Expansion plates and braces	23	19	2	110	1	153	27	312	21.9	68.20	11.8	579	10.52	1.8	78.72	13.6
Rocker boxes	24	...	10	8	...	38	...	56	23.4	13.92	3.1	424	8.89	2.1	21.81	5.2
Rocker arms	25	...	...	7	...	79	...	86	25.4	21.88	10.2	215	25.80	12.0	47.68	22.2
Links	26	...	...	137	48	222	19	426	25.5	108.68	38.8	280	17.15	6.1	125.83	44.9
Eccentric rods	27	...	...	61	1	48	...	110	21.8	23.94	10.0	230	4.55	2.0	28.49	12.4
Eccentric straps	28	...	...	18	5	71	...	94	23.6	22.21	4.3	515	10.82	2.1	33.03	6.4
Eccentrics	29	3	7	14	8	25	...	57	21.3	12.02	2.2	548	11.49	2.1	23.51	4.3
Tumbling shaft	30	...	...	9	9	67	...	85	24.2	20.53	9.5	215	2.23	1.5	23.76	11.0
Tumbling shaft and spring boxes	31	5	6	1	3	12	...	27	19.0	5.12	3.2	161	3.36	2.1	4.48	5.3
Reach rods	32	...	...	15	...	50	...	65	23.1	15.04	15.5	97	1.94	2.0	16.98	17.5
Reverse lever and spring	33	...	1	33	...	88	4	126	23.7	29.06	18.4	158	6.40	4.0	35.46	22.4
Sector	34	...	...	3	3	13	...	19	23.5	4.45	21.2	21	.42	2.0	4.87	23.2
Mud ring and cap	35	6	2	2	4	56	...	70	22.7	15.90	7.5	212	22.73	10.7	38.63	18.2
Throttle-box gland and lever	36	1	...	5	...	36	...	42	24.1	10.13	35.0	29	3.74	13.0	13.87	48.0
Whistle and lever	37	...	...	3	1	8	...	12	23.7	2.84	6.4	44	6.55	15.0	9.39	21.4
Sand box	38	3	5	1	1	65	...	75	24.0	18.00	4.5	398	11.53	2.9	29.53	7.4
Checks, complete	39	...	...	11	...	38	...	49	23.0	11.28	6.4	176	20.03	11.4	31.31	17.8
Pop valve, complete	40	...	...	3	2	5	...	10	21.5	2.15	7.2	30	6.95	23.1	9.10	30.3
Dome	41	2	...	6	...	39	...	47	23.7	11.15	1.0	1,149	24.24	2.1	35.39	3.1
Stand pipe	42	...	1	3	3	...	...	7	20.0	1.40	0.7	202	4.34	2.1	5.64	2.8
Dry pipe	43	...	...	3	8	80	2	93	24.0	22.87	6.4	350	41.29	11.4	64.16	17.8
Crotch and steam pipes	44	...	...	8	10	30	...	48	23.2	11.20	2.2	491	10.30	2.1	21.50	4.3
Exhaust pipes	45	1	...	2	...	1	...	4	15.0	.60	0.6	95	2.98	3.1	3.58	3.7
Front end of smoke box	46	...	5	...	1	13	...	19	21.9	4.15	0.9	438	9.19	2.1	13.34	3.0
Headlight boards and brackets	47	...	3	2	1	13	...	19	22.0	4.18	2.7	158	3.19	2.0	7.37	4.7
Headlight	48	...	...	...	...	...	...	...	...	...	...	...	70.00	...	70.00	...
Running board and hand rail brackets	49	...	38	1	43	...	82	21.4		17.54	6.1	287	5.74	2.0	23.28	8.1
Jackets and lagging	50	...	...	30	40	...	70	26.0		18.80	2.1	888	29.49	3.3	48.29	5.4
Cylinder casing and lagging	51	...	2	1	44	...	47	24.5		11.55	26.3	44	2.64	6.0	14.19	32.3
Smoke stack	52	30	5	11	...	50	8	104	19.0	19.58	2.9	668	31.18	4.7	50.76	7.6
Cab	53	...	...	...	122	6	151	279	27.4	76.35	...	...	36.58	...	112.93	...
Engine truck	54	...	157	12	87	73	329	23.6		74.49	1.0	7,503	195.92	2.6	270.41	3.6
Tender trucks	55	...	25	119	26	72	...	242	22.6	54.70	0.5	11,729	286.87	2.4	341.57	2.9
Tender frame (wood and iron)	56	5	...	108	68	116	...	297	21.4	63.44	0.8	7,563	131.64	1.8	195.08	2.6
Tank (steel)	57	7	14	110	143	189	21	484	21.3	103.11	1.8	5,673	309.00	5.5	412.11	7.3
Steam gauge stand	58	...	...	6	...	114	...	120	24.7	29.67	2.8	106	19.08	1.8	48.75	4.6
Deck casting	59	2	7	11	8	79	...	105	24.2	25.43	2.0	1,323	27.75	2.1	53.18	4.1
Driving wheel covers	60	4	4	83	...	22	...	113	16.5	18.63	7.2	258	7.23	2.8	25.86	10.0
Number plate	61	1	...	1	1	2	...	5	21.8	1.09	4.3	25	2.86	11.5	3.95	15.8
Pilot	62	5	5	27	80	25	8	150	22.6	33.91	2.2	1,571	16.30	1.0	50.21	3.2
Front and back braces	63	...	...	50	...	81	...	131	21.9	28.68	8.1	353	6.25	1.8	34.93	9.9
Injectors	64	...	...	...	...	...	...	...	...	...	...	...	160.00	...	160.00	...
Injector fittings	65	...	...	1	...	82	...	83	26.3	21.85	10.2	214	13.28	6.2	35.13	16.4
Chafing plate	66	1	1	4	...	5	...	11	18.5	2.04	1.9	107	2.24	2.1	4.28	4.0
Total	-	160	326	2,407	2,120	4,957	489	10,460	...	$2,353.59	...	96,047	$4,889.69	...	$7,241.28	...
Averages		...	...	...	...	...	...	...	22.5	...	2.5	...	...	5.0	...	7.5

The above table gives the cost of an ordinary 8-wheel passenger locomotive (having a wagon-top boiler) which was built in 1879 in the shops of one of the trunk lines, to haul the road's fastest passenger train. Its efficient service during the two years since, in which it has made a mileage of nearly 100,000 miles, has demonstrated the good workmanship of its construction.

The columns, number 1 to 6, shows the number of hours of work done for wages at the different rates per day of 10 hours as follows, to wit:

Column 1; wages at 50 and 75 cents;
Column 2; at $1.00, $1.12, $1.20, $1.30 and $1.45;
Column 3; at $1.50, $1.60, $1.65, $1.70, $1.75 and $1.90;
Column 4; at $2 10, $2.15, $2 20, $2.30 and $2.40;
Column 5; at $2.50, $2.70, and $2.90; and *
Column 6; at $3.00, $3.30, $3.35, $3.50 and $3.65.

The cost of "erecting" is $468.21, and includes 1,857 hours at an average of 25.2 cents per hour. This is distributed in the table, giving to each specification its appropriate part.

The average rate per pound given is cents and tenths of a cent, and is computed upon the rough weight of the material used in each specification. The total cost per pound of the finish weight of the engine complete (which is about 80,000 lbs. empty) is for labor, 2.9 cents; material, 6.1; and total for both, 9 cents.

The slabs of the frame, as received from another shop, weighed 4,188 lbs., and are charged in material at $ 519.73 which is 12.4 cents per pound for labor and material.

Painting of Locomotives.

The following paper on this subject was written by Mr. J. M. Millard, of the C., C., C. & I. road, and read at the last meeting of the Master Car Painters' Association:

"In painting locomotives the painter does not aim to get an elegant or lustrous finish, as in some other classes of painting, but has durability more particularly in view. Luster in a locomotive can be gained for a short time only. Being out in all kinds of weather, rain or shine, the machinery in constant use, the paint put on must be elastic and durable, in order to resist to a certain extent hard usage. In painting a locomotive the painter encounters certain difficulties which have to be overcome; first is rust, second is grease. Rust may to a certain extent be prevented by scouring with sand stone and emery cloth, and applying a coat of boiled oil, wiping off with waste cotton. I govern myself according to the time there is to paint, and mix my paint accordingly. My experience is that boiled for iron, and raw oil for wood, is best, the wood being more absorptive. The wooden parts I prime with raw oil, lead and a small quanty of drier; when dry, sand-paper down, cleanse and apply a coat of oil lead which dries with an egg-shell gloss. Putty on this coat, when dry, all nail holes and open grain; then sand-paper down and give a coat of dark lead. When well gone over and well puttied up, we are ready for the color—two coats of drop black ground in japan made elastic with raw oil. My experience is that greater trouble arises in not having the color elastic as regards scaling and chipping than from any other cause, and I add enough oil to make it dry with an egg-shell gloss. The next coat is the color and varnish. The safest plan is to grind the color in the varnish, then add enough varnish to work freely and dry properly. After this color and varnish is dry I letter; then give two coats of finishing varnish, allowing the necessary time for drying between the coats. The tank is done the same way, excepting that there are two coats of lead; then a coat of half lead and half metallic paint, ground in boiled oil with a quantity of japan and turpentine; then putty up with a hard drying putty. I find that putty made with metallic paint and dry lead works better than lead and oil, and holds better on iron work. The next coat is the same as the preceding one, but with less oil, made to dry firmly; then two coats of roughstuff. These two coats are rubbed with lump pumice-stone. The idea is to gain a level surface on the iron, and we have got to rub to get it. Two coats of color made elastic with oil and two coats of engine finishing varnish—no rubbing varnish except what is in the color and varnish, because it is not necessary to insure durability. The minor parts, such as the trucks, I give a coat of dark lead color or lamp-black. A coat of drop black and a coat of color and varnish made with a finishing varnish are enough for these parts. The drivers, dome and sand-box may be painted, and the little odds and ends looked after, of which there are quite a number. The paints and varnishes should be put on with an aim to economy—no more put on than is necessary."

Standard Cattle Car of the New York Central Railroad.

GENERAL DIMENSIONS.

Length of car outside of sills	29 ft.	0 in.
Width " " " "	8 "	6 "
Height of car, bottom of sill to top of plate	7 "	11 "
Door opening	5 "	0 "

BODY TIMBERS (finished sizes).

2	Side sills.....Georgia pine 4¼ x 8 in. x 28 ft.	5 in.
2	Intermediate floor timbers. " 2½ x 8 " x 28 "	5 "
2	Center floor timbers..... " 4¼ x 8 " x 28 "	5 "
2	Plates, top beveled to angle of roof.....Georgia pine 3 x 6 " x 29 "	1¾ "
2	End sills.....white oak 5 x 9¾ " x 8 "	8½ "
2	Cross-tie timbers..... " " 4 x 7½ " x 8 "	6 "
4	Draw-bar timbers, double spring.....Georgia pine. 5 x 6 " x 8 "	9¼ "
2	Draw-bar timbers, center, double spring....Georgia pine 4½ x 5 " x 6 "	2 "
2	Draw-bar timbers, double spring.....white oak. 6¼ x 8 " x 1 "	6 "
2	Buffer blocks..... " 6½ x 8½ " x 2 "	2 "
2	Brake hanger timbers " 4 x 8 " x 1 "	3½ "
2	Corner posts..... " 4 x 5 " x 6 "	8¼ "
4	Door posts..... " 4 x 4¾ " x 7 "	6½ "
16	Intermediate posts.... " 3 x 3¾ " x 7 "	6½ "
8	End post..... " 3 x 3 " x 6 "	8¼ "
4	End braces..... " 3 x 3 " x 6 "	10¼ "
2	End plates .....white oak or Georgia pine 3 x 11½ " x 8 "	5½ "
7	Main carlines.....white oak or Georgia pine 1¾ x 8½ " x 8 "	5½ "
3	Purlins .....Georgia pine 1½ x 3 " x 29 "	0 "
2	Purlins..... " " 1½ x 5 " x 29 "	0 "
4	Door frame stiles....white ash or oak..... 1¾ x 5 " x 6 "	3½ "
2	Top rails.....white oak 1¾ x 5½ " x 4 "	8 "
4	Middle rails..... " " 1¾ x 5 " x 5 "	1 "
2	Bottom rails..... " " 1¾ x 7 " x 4 "	8 "
14	Door slats..... " " ⅞ x 4 " x 5 "	7 "

Flooring, Georgia pine, 1¾-in. thick, not over 6 in. wide, planed, tongued and grooved, ⅞-in. from face; tongue, ⅝ x ⅜ edge rounded.

Bottom slats	white oak 1 x	7 in.
Intermediate slats	" " 1 x	5½ "
Panel on side	" " 1 x	29½ "

Roofing, white pine, 1¼-in. thick, not over 6 in. wide, planed tongued and grooved, and fluted on upper side.

TRUCK TIMBERS (finished sizes).

2	Truck bolsters.....white oak 8 x 12 in. x 5 ft.	9 in.
2	Spring planks..... " " 2⅛ x 11⅝ " x 5 "	9 "
2	Brake beams..... " " 4 x 6 " x 5 "	9 "

CONSTRUCTION.

Side sills, center, floor and intermediate timbers, framed to end sills by double tenons. Center of bolster, 4 ft. 10 in. from outside of end sills. Distance from outside of end sill to center of cross frame tie timbers, 11 ft. 3 in. Braces furnished with cast-iron pocket allowing ends of braces to be cut square. Bolsters of wrought-iron, top 8 x 1½ in., bottom iron 8 x ⅝ in., welded at ends. Hoits' double spring draw-bar and buffer. Buffers of wrought-iron 28 in. long, shank 5 in. wide and 6 in. deep, held in position by draw-bar stirrup of 8 x ⅝ in. iron, and plate of 8 x ¼ in. iron over top, and fastened to end of car with 4¼ in. butts, two passing through end door threshold and end sill, and two through buffer block with large washers under bolt heads. Coiled draw and buffer springs 6 in. diameter by 6¾ in. long of crucible cast steel, capacity not less than 18,000 lbs., and manufactured by the French Spiral Spring Co. Ends of car to have two ⅝-in. rods passing through end plate and head of brace and end sill; also one ½-in. tie-rod passing through corner post and let into end plate, each side of roof to have four ½-in. tie, rods through plates and purlins.

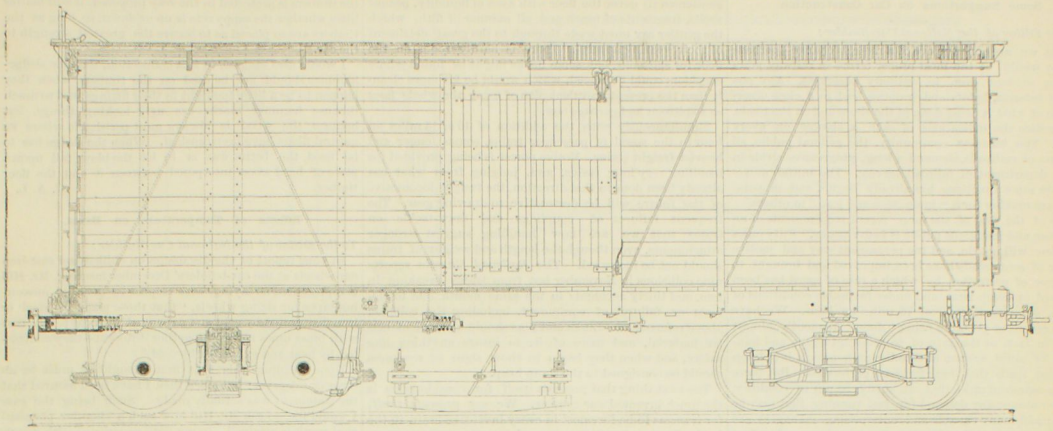
Floor to run crosswise the car and nailed with 20 d. cut nails, pieces to project 2 in. outside of sills and beveled ¼ in. Doors 6 ft. 6 in. long and 5 ft. wide, supported at top on wrought-iron bar 2 x ⅜ in. set on edge and blocked out with castings; double roller hangers of malleable iron, rollers 3 in. in diameter. Car to have two trap-doors 25 x 15 in. in roof at opposite corners, and a small door 26 x 29 in. at each end. Roof purlins to run full length of car without splicing. Running board to project 7 in. at each end of car, the projection to be of oak 1¼ in. thick, supported by wrought-iron brackets, iron to be ⅝ in. thick by 1½ in. wide. Brake standard 1¼ in round wrought iron, enlarged to 1½ in. at lower end, forming drum for chain to wind on. Brake wheel to be 20½ in. above roof. Brakes hung to car body. Wrought iron steps and corner irons on end of car, as shown in drawing. Center pins 1¾ in. wrought iron, 12 in. long.

Trucks of New York Central standard pattern, axles 5 ft. from center to center, transoms of Thielsen truck channel bar 10½ in. wide. All holes through bars and castings to be drilled. Axles of M. C. B. standard; journals, Hopkins' patent lead-lined; journal boxes, M. C. B. standard, except front, which is to be altered to suit Hewitt cover. Wheels, 525 lbs. each, pressed on at a pressure of not less than 60,000 lbs. Springs, 15-ton Middleton steel springs.

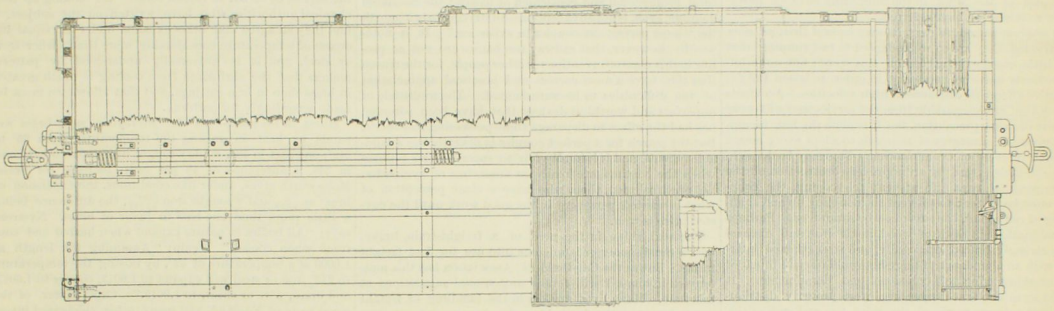
Bolt heads and nuts on inside of car to be let in flush and all sharp corners removed; and all screw-threads, bolt heads and nuts must conform exactly to M. C. B. standard. The woodwork, usually painted, to have three coats mineral paint; iron work one coat of gloss black; trucks, two coats of mineral paint; the same paint also for roof, top of floor timbers and sills and mortises and tenons.

Wrought iron in car body	2,152 lbs.
Cast " " " "	523 "
Malleable " " " "	13½ "
Steel " " " "	133½ "
Wrought iron in truck, including axles	3,144 "
Cast " " " " wheels	5,366 "
Malleable in trucks	48 "
Journal bearings in trucks	80 "

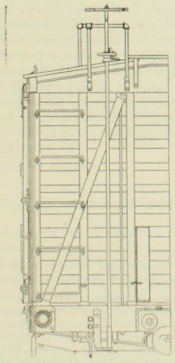
STANDARD CATTLE CAR OF THE NEW YORK CENTRAL; MICHIGAN CENTRAL LAKE SHORE; AND CANADA SOUTHERN RAILROADS.



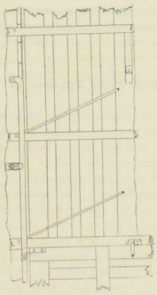
Side Elevation.



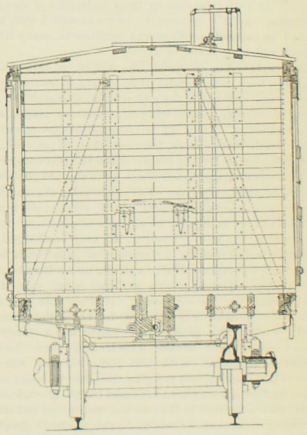
Floor Plan. Roof Plan.



Half End Elevation.



Part Side Elevation, Left from Door.



Inside End Elevation.

The double deck stock car to be the same as cattle car, with the following exceptions: Extra floor half way between lower floor and under side of carlins, supported by two pieces Georgia pine 2½ x 5½ in., set edgewise and reaching entire length of car, and resting in pockets in end slats placed 2 ft. 4 in. apart and supported by two ½ in. truss rods at each post, passing under the timbers and resting on cast iron-bearing; floor supported at ends by 1 x 11 in. slat and piece of oak 1½ x 4 in., lower edge beveled. No doors in roof.

A CORRESPONDENT of the *Railroad Gazette* says: "The time is evidently ripe for a new standard of taste and a new method of finish in cars, and we may as well make the best of it. The movement is very plainly in the direction of greater simplicity, one wood simply ornamented by cutting into its substance by hand work or by machinery. Let us also hope that it will take the direction of unobtrusiveness, of general effects which shall not push themselves on our attention by great contrasts or excessive 'style.' The car which is simple and unobtrusive will not have to be rebuilt in the next five or ten years because its style has become ridiculous, but I fear some other cars will be under just this necessity; for the American people are changing in taste as no mass of people ever did in so limited a time. It is therefore wise to keep on the negative side of the movement—simplicity and neutral tints—until the people have tired of the subject, and the craze has done its work and left some sort of standard as a legacy to the future."

THE car wheel grinding machines made by the Chilled Car Wheel Grinding Co. have been adopted by the Chicago, Milwaukee & St. Paul and Canadian Pacific railroads.

THE following table shows the average mileage made by nine different kinds of steel tires used on the driving-wheels of locomotives of the Chicago, Rock Island & Pacific road:

	1879.	1881.
No. 1	13,539 miles	13,835 miles
" 2	12,959 "	12,906 "
" 3	11,604 "	12,742 "
" 4	12,800 "	12,113 "
" 5	11,560 "	13,335 "
" 6	14,883 "	11,548 "
" 7	9,810 "	11,435 "
" 8	7,469 "	8,751 "
" 9		9,296 "

Communications.

Some Suggestions on Car Construction.

To the Editor of the National Car-Builder:

That we are on the eve of a radical change—perhaps *reform* would be the most proper term—in railway practice, is evident even to ordinary observers. Any one whose interest, habits and training lead to a close observation of what is being done in the shops and on the roads, will notice the indications of such a change on every hand. The business community, the general public, all patrons of railroads, demand a long, progressive stride in every department of railroad service. The initial movement in some directions has already begun, and preparations are making for a "jump, step and leap" in others.

One of the first of the more recent requirements of an exacting and fastidious public is faster trains. Fifty miles an hour will not do, and the permanent way and motive power of some roads have been improved and brought to a degree of perfection by which a rate of speed has been attained in short runs, and under favorable conditions of grade, alignment, etc., of 76 miles an hour. We have also a record of 111 miles being "done" frequently, almost daily in fact, at the rate of 68 miles an hour; and hundreds of miles are run at 60 miles an hour. It is only on the best roads that these feats are performed. But there are thousands of miles that can easily be put in condition to meet almost any demand for fast running that may be made; and many capable and enterprising managers are already giving their attention to the matter. The first thing to be looked after is the permanent way, next the motive power, and lastly car rolling stock. It is only with the latter that we propose now to deal, our object being to offer some suggestions to car-builders with respect to their part of the work in the impending advance movement to which we have referred.

As respects passenger cars, it may be said that, as now constructed, they are so well adapted to fast running that but little change is needed on this score; but some improvements may be necessary in order to lessen the destructive effects of collisions at high velocities. Accidents of this kind are inseparable from the service and will occur in spite of every precaution, but it is none the less incumbent upon the managers of railroads to adopt every means for their prevention or mitigation. This may be done to a considerable extent by an improved construction of the frame-work of cars. To prevent telescoping, the coupling must be better; to prevent the doubling up and splintering of car bodies, the sills must be improved. Perhaps a combination sill made of wood, angle iron and channel bars strongly braced diagonally, and strengthened laterally with an abundance of tie-rods, would obviate much of the crushing effect of collisions and derailments. It would seem also that if more iron were properly distributed in the frame-work of the sides, top and ends of the body, it would serve as a partial protection to passengers, especially in the event of a car rolling down an embankment and landing on its side or bottom upwards. It is not expected that any manner of construction will prevent more or less slaughter in such cases, but if cars were built with special reference to their resistance of shocks and strains, and all destructive forces to which they are subjected in cases of collision and derailment, many lives and much suffering would be saved.

With the increase of speed the weight of cars is also increased, which may render it necessary to increase the size of axles. Broken axles and wheels, although not of frequent occurrence, considering our immense traffic, are yet too numerous. From 12 to 18 accidents are reported monthly from these causes, but more than 80 per cent. of broken axles are on freight trains, while the percentage of broken wheels on freight cars is not more than 60 per cent. of the whole number broken. But considering the number or cars in use in each department of the service, the number of breakages is largely on the side of passenger cars. This cannot be due to over-loading, but may be charged to shocks received in coming in contact with guard-rails and frogs at high velocities. Fancy a strong man with a heavy sledge giving repeated blows on the inner side of a wheel flange in the direction of the axis of the wheel. We should expect him to break the flange, at least, with a fair prospect of producing a fracture in some other part of the wheel, and these blows are light as compared with the pounding the wheels receive when hacking and gouging the ends of badly constructed and misplaced guard-rails and frogs. If engineers will give their attention to the two last mentioned fixtures, the number of broken wheels and axles would be greatly diminished; but as it will be some years before these destructive agents will all be removed from the tracks, it would be well for car-builders to improve their wheels and axles with special reference to this kind of usage and the coming fast trains.

The subject of car ventilation has been written threadbare, and some very good ventilation has been produced, but it is not an easy matter to provide for the escape of foul air, the admission of fresh air, and at the same time exclude dust, smoke and cinders. A fortune awaits the inventor who will come forward with a perfect system of ventilation. But the one who will invent a receptacle for tobacco juice and expectoration will be regarded as a genuine public benefactor. The great mass of Americans travel in ordinary coaches which are usually well filled with what are popularly styled "ladies and gentlemen." The gentlemen (?) cover the floor with a sea of liquidity, peanut shells, fragments of lunch and all manner of filth, which the gentler sex must wade through to the great detriment of their wearing apparel. There is hardly room on the floor for spittoons, but some nooks might be found where cuspidors could be placed, which would be far more cleanly than the present prevalent plan of using the whole floor as a spittoon and garbage box.

Simultaneously with the addition of 10 or 15 miles an hour to the speed of passenger trains, comes longer and heavier freight trains. Motive power is being provided for handling very long trains, and, judging from what has already been done in that direction, the freight locomotive of the future will be destructive to drawing gear. The frequent failures of couplings and draw-tackle on trains that we are now handling suggest stronger attachments, even though the length and weight of trains should not be increased. The *Railroad Gazette* reports nine collisions in November last from trains breaking in two, and thirty accidents in the same month due to defects or failure of equipment, including the collision above referred to. Links and pins should be made of better material, and more of it, to insure anything like safety, and when they begin to show signs of weakness should be consigned to the scrap heap.

The next thing that presents itself for consideration is the much invented car-coupler. We say *presents itself*, for it seems to be foremost in every inventive brain in the land. There is hardly a person of a mechanical or speculative turn of mind who cannot show from one to a dozen models of this fascinating device—not fascinating to those who use them, by any means, but, on the contrary, quite the reverse. The mania pervades all classes, mercantile, agricultural, professional and gentlemen of leisure; the cloistered dominie, even, is not an exception—all striving to bring forth the "most perfect car-coupler in existence." It is noteworthy, however, that railway mechanics are not as prolific in this class of inventions as other people, for the reason that they have a more correct and practical appreciation of the difficulties to be surmounted. The multitude of imperfect and worthless devices that have been patented has had the effect to disparage those possessing real merit. But the search for a perfect coupler is nevertheless a laudable pursuit, and it is hardly fair to sneer at the failures when the victims are really so deserving of sympathy. Let practical men, then, who have a clear perception of what is wanted persevere in the good work until the coveted prize is won.

The next thing is the need of a freight-train brake, which must sooner or later come into use for fast freight trains. But as the Car-Builders' Association has this matter well in hand, I will forego any special suggestions at this time. Many lives are lost in the handling of freight cars, owing to defective ladders, hand-irons and running-boards. It would surely seem to be no difficult matter to suggest practical means to remedy this, but as the subject has recently been so fully discussed, it would be superfluous to say more until the means already proposed are carried more fully into effect. The caboose car as now constructed is not what it should be. It should be provided with end doors, with platform steps and every facility for safe ingress and egress; a cosy observatory on top for a lookout, and stairs at either end on the inside for reaching the top without climbing around the outside. Some roads have cabooses of this description, but they are exceptional and not the rule.

WM. S. HUNTINGTON.

How to Protect Floor Timbers of Freight Cars.

To the Editor of the National Car-Builder:

It is well known to every car-builder that the floor timbers of box cars will last much longer than those of flat cars; and the same may be said of these timbers in cattle cars, although they are exposed to the moisture which accumulates on the floors. The reason for this is obvious. So long as the water can be kept off the floor timbers, they are not liable to rot or decay. In view of the increasing scarcity of timber in this country, our railroad men will at no very distant day be compelled to look for some other material for building cars, and will probably make use of iron for floor beams and other parts that are now made exclusively of wood.

In the meantime, and as a temporary expedient, would it not be well to lay on the floor timbers of flat cars strips of tin or zinc before the flooring is nailed on? The nails could easily be driven through the thin strips of metal, especially if pointed nails were used. This would protect the timbers from water or moisture which might find its way through the floor joints. The additional cost would be trifling, while it would doubtless add a year or more to the life of the car. The paint or tar which is usually laid on the timber is very good in its way, but it is not entirely effectual in keeping water out of cracks and crevices, where it causes rot to begin. The proposed plan has also another advantage. It is the usual practice to lay the sap edge of timbers downward, because the sap will decay sooner than solid wood, and rot always begins at the top where the moisture soaks through the floor. Now, it frequently happens that timbers are not straight, but arch-bent, and these should be laid so as to arch upwards. If the upper edge is sap, the workman is perplexed how to lay it so as to conform to both rules. But if the top of the timbers is protected in the way proposed, it will matter little whether the sappy side is up or down, so long as the timbers are so placed as to secure the greatest strength to the car.

I would also suggest, in this connection, that the sledge-hammer should not be used on the timbers when they happen to be a little too tight in their fittings; not so much because hammer marks are ugly looking things, but because the wood is always most perishable where its natural fibers have been crushed. When the sledge has to be used, the better way is to let the blow fall upon a piece of hard wood interposed between it and the floor timber.

C. A. L.

Effects of Temperature on Brass.

To the Editor of the National Car-Builder:

In your report of the discussion on chilled and cast-iron car-wheels at the car-builders' December meeting, Mr. Hill is represented as saying, with respect to metallic measuring tapes for sizing wheels, "that those made of steel or iron contracted by cold and expanded by heat; but that with brass tapes it was altogether different—they contracted by heat and expanded by cold."

Upon reading this I at first thought it must be an error or misprint: but since then I have been assured that the statement was actually made. Such being the case I would like to ask Mr. Hill how such a singular phenomenal result is attained. In my own experience with metals I have always found that all kinds, without any exception, expand by heat and contract by cold; and that brass conforms to that law to a greater degree even than steel or iron, there being no difference whether the sections of the metals be of bar or ribbon form. On looking up mechanical authorities who have written on the subject, I find they all agree that brass expands under an equal increase of temperature considerably more than either iron or steel, and it is universally understood by pattern makers that the shrinkage from cooling is much greater in brass than in iron castings, and that allowance must be made accordingly for patterns.

Hurst, in his hand-book for surveyors, says brass expands by heat in raising the temperature from 32° to 212°, one part in 584, while wrought iron expands only one in 846, a difference of 45 per cent. increase for brass. Molesworth gives, under like conditions, the expansion of brass as $\frac{1}{1000}$ and wrought iron $\frac{1}{10000}$, the difference being a little more than one-half in favor of brass. Nystrom says: "All bodies in nature expand when heated and contract when cooled." Again: "Assuming the length as 1.0000 at a temperature of 32°, by raising the temperature to 212° iron or steel will expand to 1.0012, copper to 1.0017, and brass, wire or sheet, to 1.0019." Capt. Kater, of the royal navy of England, and many other celebrated investigators who could be named if necessary, agree closely on the expansion of metals by heat, and vice versa; and, therefore, if the statement made by Mr. Hill can be substantiated beyond a question, the result should be trumpeted from the house-tops.

That brass expands by heat and follows the general law of all other metals can, however, be proved by a very simple experiment, which is merely to fit a brass ferule or hoop over a stick or spindle of any kind, so that when cold it will fit moderately tight; then warm the ferule or hoop slightly and notice the result. If it can be put on and taken off easier hot than cold it will prove the truth of the established theory; but if, on the contrary, the hoop fits tighter when heated, then our theory will be all wrong and Mr. Hill's right.

JOHN ORTTON,
Canada Southern Railway.

The Link-Motion Valve-Gear to be Supplanted.

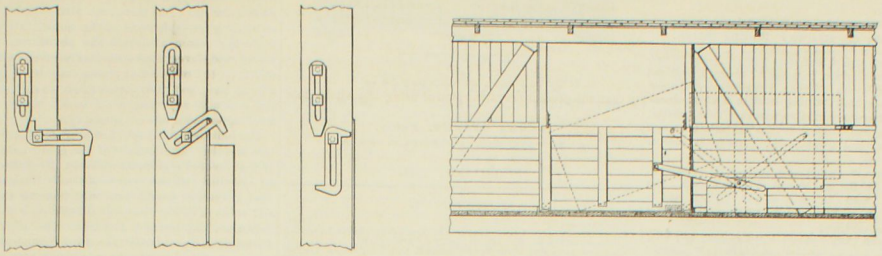
The *Railroad Gazette*, in a descriptive notice of Joy's valve-gear as applied to outside cylinder locomotives of the American type, remarks as follows in regard to the superiority and continued use of the link-motion:

"To many mechanical engineers it will probably seem almost like desecration to question the superiority of the link-motion over all other forms of reversing and expansion gear for locomotives. The introduction of that mechanism was at first bitterly opposed, but afterwards its victory was so complete that mechanics have fallen into the habit of thinking that nothing can supplant it. Nevertheless it seems probable that its days are numbered, and that some of the new forms of valve-gear which have been introduced during the past few years will, possibly with some modification, take its place."

The Joy gear is an English invention that has been applied to a number of English locomotives with the best results. It is claimed to be more simple and less costly than the link, more correct in its principle of construction and more accessible for inspection and repair.

THE Keystone Railway Car Spring Works, of Philadelphia, were destroyed by fire on the 20th ult. The event will not seriously interfere with the business, as a new factory, 110 × 150 feet, adjoining the old works, has been in course of erection, and will be completed in two weeks. The delay in deliveries will be only temporary, as the greatly increased facilities afforded by the new factory will enable the proprietor to fill orders promptly.

IMPROVED GRAIN DOOR FOR FREIGHT CARS.



THE cuts illustrate an improved grain door, patented by Susemihl & Miller, of Detroit, Mich. The aim of the invention is to provide a fixed door that is easily operated, durable, and at the same time cheap and simple in construction, and which will in its practical working supersede the use of temporary doors with their many obvious disadvantages. The inventors have for many years been connected with the car department of the Michigan Central road, and their experiments in devising a more perfect grain door have been conducted with a thorough practical knowledge of what the interests of transporters and shippers require.

The door is operated by first starting it from its closed position by a crowbar acting upon a pocket casting on the lower outside corner. This is easily and quickly done, and the inside pressure is relieved as soon as a small quantity of grain has escaped. Instead of being raised vertically parallel with the floor, the door is then easily pushed sideways, the guide-bar leading it automatically to its open position against the car wall until the front end falls behind the catch on the girt. The peculiar construction of the guide-bar is the novel feature of the plan. It has, as will be seen, the form of a button, the lower limb extending some 12 inches below the fastening bolt, which runs through the wall and has a nut on the outside. This lower extension, while moving, bears against a hardwood block of the same thickness as the door, and prevents the upper end from flapping away from the wall, the whole bar moving parallel with the wall and holding the door always between it and the wall, and being at the same time slightly elastic, so as to yield to any slight obstruction. By thus holding the door snugly against the car side, the clumsy rod often used for the purpose is dispensed with, and the operator is enabled to bring the door down without jamming or endangering his fingers, the rear end being tipped downward over the rounded corner of the blocking to the threshold, when it is easily pulled along to its place, where it is held by the two lugs snug to the posts. An ingenious malleable iron lock is also shown in the cuts in its different working positions. This lock holds the door to the threshold and posts, and cannot be shaken loose.

This door was adopted as a standard by the Michigan Central road more than a year ago, and is being tried by other roads. It has also been highly approved by elevator men and shippers. The patentees offer to furnish railroad companies with facilities for testing its merits, charging no royalty for the first fifty or hundred should the tests not prove satisfactory.

The Buffalo Car-Tracing Association.

This organization, the official name of which is "The Railway Car Association," was started in Buffalo, N. Y., about two years ago, with a membership of seven roads and two freight lines, which has since been increased to 38 roads and four freight lines. The following statement of its methods of operation has been furnished us by the manager, Mr. C. W. Cushman:

The central office of the Association is at present receiving about 1,600 daily tissue copies of original junction or interchange reports, as sent to the various car accountants, also station reports showing arrival and departure of cars from all principal stations, together with reports of detention of cars at principal stations, and also shop reports of cars going in for repairs. The cars from these several reports are entered daily upon the respective records, and from these the following reports are made up and sent to the proper officer of each road belonging to the association:

A "daily location" report, showing the exact location of all cars away from the home road. This report is up to within one day of date, with the exception of such points as are too remote to be heard from in a single day.

A "distribution" report is sent out twice a month, or as much oftener as may be required, showing the whole number of cars away from home and on foreign roads, giving names of roads and number of cars on each. When requested, the cars in this report are classified.

An "abuse" report is made out whenever the records show that a car is being misused in any way, and giving its movements since leaving its own road up to date, thus placing the abuse or improper handling where it rightly belongs.

In respect to tracing, and in order not to conflict with the car accounts' tracing, special arrangements are made with the proper road officials for that purpose. The association, having the power from the respective roads to order cars sent home at any time, keep men constantly employed in searching records, making out tracers and abuse reports. By receiving prompt replies, the records of the association are rendered more complete, and valuable assistance at the same time afforded the roads.

There is a branch office in Boston, designed to secure the prompt return of cars from the New England States, three traveling men canvassing the territory and reporting every night to the general agent in Boston, who in turn reports to the Buffalo office. These three men act as agents for all the roads in the association, each road thereby getting the benefit of their united efforts at a much less cost than if each road employed a man for itself. The cost of the association to the roads is based upon the work actually done, and for which payments are made once a month. It is expected that branch offices will be opened at Chicago and St. Louis early this spring.

The Late Webster Wagner.

The late Senator Wagner, President of the Wagner Sleeping Car Co., who was killed in the recent accident on the New York Central & Hudson River road, was a man whose career was a remarkable one. His parents were Germans. He was born at Palatine Bridge, N. Y., Oct. 2, 1817. At an early age he was apprenticed to his elder brother James as a wagon maker, in which business he became proficient, and in due time started for himself; but not meeting with the success he anticipated, he was subsequently appointed station agent for the Utica & Schenectady railroad in his native town. This proved to be the turning point of his life. Always a keen observer, it occurred to him that it was possible to increase the comforts of railroad travelers, and at the same time to make the scheme profitable. After constructing numerous models, and much experimenting, four sleeping cars were built at a cost of $3,200 each, and commenced running on the New York Central road, Sept. 1, 1858. In order to improve the ventilation, the elevated roof was devised, which is now an indispensable feature of all passenger cars. His first drawing-room car was put in operation in August, 1867. In the promotion of his enterprise in the introduction of this marked innovation in railway car accomodations, he was aided by the co-operation of Commodore Vanderbilt, and with abundant capital at his command his operations were rapidly extended, resulting in the accumulation of quite a large fortune. His legislative career commenced in 1871, when he was elected to the New York Assembly, and in the year following to the State Senate, in which body he continued to hold a seat until the time of his death, serving on important committees and taking a prominent part in the legislation affecting railroads.

American and English Passenger Cars.

The London *Engineer*, after describing the train of Pullman cars recently put on the London & Brighton Railway, comments as follows on the relative merits of the English and American systems of passenger car construction:

"The relative merits of the American long, open car, with avenue from end to end of the train, and the English carriage system, have received so much consideration from public safety and prejudice points of view, that it is unnecessary to say anything in these columns on the subject. The comfort obtainable in cars on either system is very much a matter of opinion, and depends again on the value put on the freedom of movement from place to place, which the long car system gives, as well as upon the comfort in cold weather, which the heating arrangements secure. For short journeys Englishmen will probably long prefer the wide-seated, comfortable carriages at present in use on our best lines, and the privacy of these; but as to privacy we shall probably be glad to give that up, as we have done in removing the old high pews from our churches. There is, perhaps, a little to be said on the question of comfort from another point of view, namely, as affected by the movements of the cars on the two systems. The old comparatively short cars rock or roll with movements of short range. The inertia of the long, heavy cars is such that the movements and shocks of preponderating intensity and direction only are transmitted to the car, and hence cars have a somewhat steady, rolling motion, occasionally causing some discomfort to passengers easily affected by the movements of a boat on the water. Persons so easily affected are, however, not numerous, but the fact that these long cars are of great weight, and therefore of great inertia of either motion or rest, is suggestive of other reflections as to the possible effect this may have on the safety of their running. A car with so heavy a body will tend to continue its course in opposition to the movement of its leading bogie when that enters a sharp curve, for instance, with much greater persistence than the shorter and very much lighter English carriage, and in this way a strong tendency may be set up to cause the leading bogie to leave the track, especially at crossings. We should not like to say that the heavy, long car is especially liable to this, but we are reminded that a very large proportion of all the train accidents in America are derailments, which cannot be explained as resulting from any of the usual causes, such as misplaced switch, broken rails, wheels, axles or couplings, broken bridges, spreading of gauge, accidental obstructions, cattle, or malicious. There were, for instance, no less than 34 unexplained derailments during the month of October last, and more than that number from causes which were ascertained. American master car-builders, moreover, find it necessary to pay great attention to the flanges of their car wheels and to prevent the frequent breakage of flanges are trying wheels with the treads only and not the flanges chilled. Even, however, if the objection we have made has any foundation in fact, it is easy to avoid it by running slowly at small curves, that is, if running slowing at such places can always be thought of and easily done."

Our English contemporary is not very well posted in the matter of chilled iron car wheels, which is not surprising in view of the fact that such wheels are not used on English roads. Very little trouble is experienced in this country from the breaking of flanges. The treads of cast-iron wheels are always chilled, and as a rule, the chill is extended half way up the flange, and is of sufficient depth to prevent any wear on the soft iron of the flange until the whole wheel is worn out.

Tubular Iron Freight Cars.

A meeting composed of quite a large number of railroad men, representing the mechanical and freight departments of various Eastern roads, was held at the Gilbert & Bush Car Works, Troy, N. Y., Jan. 20, for the purpose of discussing the merits and availability of freight cars built of wrought-iron tubes and channel-iron end sills and bolsters, with malleable iron fastenings, with a view to the general adoption of such cars in freight transportation.

A number of cars of this description, built by the United States Tube Rolling Stock Co., of New York, were carefully inspected, and, with the exception of some minor points, were fully approved as being well adapted to the service for which they are designed. The cars consisted of one gondola car 32 feet long, standard gauge, and weighing 15,000 lbs.; and ten narrow-gauge cars of the same class, built for the Pittsburg, Bradford & Buffalo road, 27 feet long, and weighing 10,400 lbs. each. They are similar in their construction to the tubular iron cars that were built a few years ago by the National Tube Works, with some important exceptions, however. The body frame consists of two tubes instead of three, the end sills and transoms are of channel iron, and the parts are held together by finely tempered malleable iron castings. Each tube has an iron rod running through it which is held to the end sills by nuts, the whole structure being a combination of tubes, rods and channel iron in such a way as to secure the greatest strength with the least weight. The standard gauge car referred to has a guaranteed capacity of 40,000 lbs., while its weight, with diamond trucks, is some 5,000 lbs. less than that of a wooden car of the same class. It is claimed, in fact, that the capacity of the car is only limited by the strength of the trucks, and that in a freight train of 40 cars between Troy and New York the average saving by the use of tubular cars would not be less than $75 a trip, resulting from diminished dead weight, less wear on running parts, due to greater elasticity

of car body, and less outlay for annual repairs. The cost of these cars is said to be about the same as that of wooden cars of like capacity.

Recent Reports of Railway Rolling Stock.

Philadelphia, Wilmington & Baltimore.—86 engines; 112 passenger, 4 parlor, 21 smoking and baggage, 47 baggage, mail and express, 1 calf and 3 milk cars; 772 box, 8 refrigerator, 62 stock, 361 flat, 65 lime, 2 dump and 13 lumber-truck cars; 1 pay-car and 16 service cars. Increase during the past year, 8 locomotives, 4 passenger, 3 smoking and baggage and 12 baggage, mail and express cars; 6 box cars and 1 service car. Average locomotive mileage, 31,661.

New York, Providence & Boston.—29 engines; 32 passenger, 12 baggage, 147 box, 120 flat and 56 coal and gravel cars. The company also owns a share in 13 passenger, 2 postal and 9 baggage cars in the Shore Line, and in 13 passenger and 2 baggage cars on steamboat train.

Pittsburg & Lake Erie.—30 engines; 1,310 freight and coal cars, 30 passenger, 15 caboose cars, 1 wreck car. In addition to which the Imperial Coal Company has 123 coal cars, and the Little Sawmill Run Coal Company has 210 cars in the service. Additions were made during the year: 6 engines; 190 freight and coal cars, 3 caboose cars, 1 wreck car, 6 passenger cars.

New York, New Haven & Hartford.—100 engines; 201 passenger and 68 mail and baggage cars; 2,147 freight cars. During the year there was an increase of 3 engines, 8 mail and baggage cars and 460 freight cars, and a decrease of 3 passenger cars.

Maine Central.—58 engines; 62 passenger, 5 postal and 23 baggage cars; 678 box and stock and 509 flat cars; 31 caboose and tool cars; 17 snow-plows and 10 dange scrapers.

Charlotte, Columbia & Augusta.—20 engines; 8 passenger, 2 sleeping, 8 combination and 4 mail and express cars; 135 box, 8 stock, 56 flat and 9 caboose cars; 1 pay and 9 shanty cars. The shops at Columbia have been enlarged and a number of new tools added. Several cars and one locomotive were added to equipment during the year, and two light locomotives sold.

Fitchburg.—100 engines; 91 passenger, 27 mail and baggage, 2,243 box, 816 flat, 26 caboose, 197 gravel and other cars, and 9 snow-plows; total cars 3,409.

Allegheny Valley.—75 engines; 26 passenger, 9 combination, 8 baggage and mail, 297 box, 1 stock, 1,205 coal, 32 rack, 283 oil tank, 45 flat, 24 caboose, 1 directors', 1 pay and 26 service cars; a total of 1,968 cars.

Wilmington, Columbia & Augusta.—27 engines; 12 passenger, 1 parlor, 4 postal, 2 baggage and express, 220 box and 180 flat cars; total, 419.

New York & New England.—127 engines; 130 passenger, 3 sleeping, 30 baggage, 1,925 freight and 450 gravel and other cars. Since date of report, Sept. 30, 788 additional cars have been put in service, making 3,326 cars in all. The company works 463 miles of road.

Boston, New York & Philadelphia.—34 engines; 15 passenger and 2,421 freight cars.

The Color-Blind Problem.

The Pennsylvania Railroad has solved the difficult problem of testing the color-blindness of over 35,000 employés, with due justice to the men and due regard to the safety of the public, by adopting an apparatus invented by Dr. William Thompson, of Philadelphia, in which the primary colors—red and green—are mounted, and the "confusion colors" strung by their side and alternated with red and green, the latter being numbered odd and the former even, an order which can be reversed. In the examination, which can be made with safety and success by any division superintendent, the man under a test is asked to select ten colors by numbers, and a register of his selection at once determines the character of his eyesight. If he picks both odd and even numbers, or the wrong set of alternates, he is color-blind. So far under the tests made by this system 4 per cent. are reported as defective, the average of defective eyesights recorded by scientific observers. The plan has been adopted and is in full operation—a notable instance, when compared with the row over the same subject raised in Connecticut, of how much easier a railroad can legislate than a State legislature.

MR. E. H. TALBOTT, President and Manager of the Railway Age Co., of Chicago, has issued a circular suggesting a national exhibition of railway appliances, to be held in that city at such time as may be deemed best by those who are disposed to interest themselves in it, and also asking for the opinions of such parties in regard to the feasibility of the undertaking and the details of its organization.

THE verdict of the corner's jury in the matter of the Spuyten Duyvil disaster is so indiscriminately sweeping as practically to amount to nothing. It implicates the brakeman, conductor, three engineers, Superintendent Toucey, and the officers and managers of the road generally—or, to speak figuratively, fires into the flock. Sensible people, however, are not disposed to correct alleged railway negligence in this rattling way. The only feature of the verdict that has any force is the imputed blame for not having more effective means at hand for breaking into the cars and putting out fire, a neglect which is shared by all the great railway lines of the country. The direct and indirect pecuniary losses resulting to the road from such a mishap are likely to be more effective in forcing the adoption of additional means of prevention than any fears of criminal indictments for mismanagement. The verdict is an evidence that the jurors had a very imperfect understanding of the case they were dealing with.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and copies kept for sale, at the following places:*
A. WILLIAMS & CO., 283 *Washington St., Boston, Mass.*
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WILLIE H. GRAY, 306 *Olive Street, St. Louis, Mo.*
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THE CHANGED CONDITION OF THE SOUTH.

For half a century or more the South has devoted its energies almost exclusively to agriculture, or in other words, to the cultivation of cotton. A steady increase of the crop from year to year has been regarded as the sure and only index of prosperity. The market for the great staple has kept pace with the increasing product, and the necessary capital could almost always be raised by advances on the next succeeding crop. All other resources of soil and climate were comparatively neglected. Mining, water power, forests rich in valuable timber, vast areas of untilled land, were little thought of, and of course there was hardly any appreciation of the benefits to be derived from diversified industry. The whole cotton-growing region east of the Mississippi River was practically isolated from the rest of the world until railroads began to be constructed here and there to facilitate transportations to the shipping ports and convey merchandise and supplies from the ports to the interior. That these roads could be made instrumental in developing other resources, aside from the staple, was almost as little comprehended as were the extent and variety of the resources themselves. On this account, and for the lack of capital, railroad progress has been slow at the South, while in other sections of the country it has made prodigious strides.

A great change, however, is impending, and has in fact already begun, which bids fair to make the South during the next twenty years a great theater of railroad extension, and for the employment of outside capital in new and various manufacturing enterprises, the effect of which in promoting emigration and the rapid growth of towns and cities will place it more nearly on a par with the North and West. The Atlanta exhibition has given a powerful impetus to the movement by bringing together thousands of representative men from the two sections of the country. The manufactured and native products of each have been exhibited, and an opportunity afforded to Southern planters to examine the best and most approved agricultural implements and machinery. Extensive sales of these have been made by exhibitors, some of the machines being very expensive. Northern capitalists have discovered new fields for investments that promise a rich harvest at no distant day. Many a sleepy, stand still Southern town will soon awake to the fact that it can have a factory, a forge or a furnace, and be none the poorer for it. But the great idea which has long been struggling into existence at the South is that of manufacturing cotton alongside the plantation, so to speak. In old ante-slavery times this idea received small encouragement, for the reason that it was considered more respectable to plant and raise cotton than to spin and weave it; but it is now asserting itself under better auspices, and to all appearance has come to stay.

The indispensable basis, however, for Southern recuperation and the development of the great natural resources of that favored region, as well as a diversified industry, is an extended railroad system of trunk lines and branches. Such a system would not only increase the production and value of cotton, but would build up a thousand other industries that are now dormant. The present year will doubtless show a large increase of construction mileage south of the Ohio River. A number of new enterprises have already been started, and the indications are that many of them will soon be in operation. It is indeed a safe prediction that when the century closes, the South will be overlaid with a network of railroads as intricate as now exists at the North, and with as good a paying traffic. What we have said has reference to the South proper, or territory east of the Mississippi, in which the existing lines are nearly all 5-foot gauge. All new lines should, of course, be built to conform to the prevailing standard of 4.8½, as it is only a question of time when all Southern roads will have to conform to it, or remain in a state of comparative isolation.

As a contrast with the old traditional South, the State of Texas fairly illustrates the nature of the change that is going on, the new mileage within its limits amounting to nearly 1,500 during the past year. In view of its spacious territory, extended coast line, the recently opened railroad connection with the Pacific, and its present sparse but increasing population, the possibilities of its future growth and commercial importance can hardly be overestimated.

THE SPUYTEN DUYVIL CALAMITY.

There is a grim contrast between the costly furniture and decorations designed to minister to the comforts of railway travel in palace cars, and the unspeakable horrors which followed the crash at Spuyten Duyvil on the evening of Jan. 13. Buoyant health, joyous anticipation, abounding life and a sense of perfect security, were changed in an instant into a hideous scene of suffering and death, and this from no fault of the victims, but from the stupid delinquency of an individual employé of the road. This was the immediate cause. Whether it was the primary cause is another question, in regard to which opinions may differ.

Nothing is more certain than that accidents of this class—collisions between passenger trains—are absolutely preventable if the right means are resorted to and put in operation. The record of such accidents for the past twenty years virtually proves it. They have become fewer in number every year, notwithstanding the increasing number of trains run and largely increased mileage. Those that do occur are less destructive in their character, less obscure as to their causes, and may usually be traced to some special negligence. Improved switches, signals, brakes and running gear, in connection with the adoption of the block system on one of the great lines, have contributed very much to reduce the number of accidents. The management is also better, and this has been productive of better rules and regulations and better discipline. Although the small percentage of passengers killed and injured is an indisputable proof of the general safety of railway travel, the fact remains that a much greater degree of security can be attained by the use of means, the absence and efficiency of which become so apparent after the mischief has been done.

What, we would ask, is obviously the most effective safeguard against passenger train collisions upon lines where through and local trains follow each other at intervals of from fifteen to thirty minutes, as is the case in the vicinity of large cities. It is unquestionably the block system. This is not proved by assertion, but by results, and the daily observation of its working. Suffice to say that its operation renders it impossible for more than one train to be on a section or "block" of the road at the same time, unless the telegraph and signal operator suddenly loses his senses, drops dead, or abandons his post, and there is no one present to notice the occurrence. To organize this system and put it in operation involves some expense, of course; but to speak of that in view of the recent calamity seems like trifling. Its supreme merit is that it does not make the safety of train loads of human freight dependent on the unfailing watchfulness and fidelity of a single person, whose mental caliber and sense of responsibility may be considerably below the average.

Our American passenger cars, in respect to safety in case of fire, are defective in their construction, and we may almost say unavoidably so. As a means of exit in an emergency there is only a narrow door at each end, allowing one person to pass out at a time—a slow process, as every body knows, when each of the fifty or sixty passengers must patiently wait his turn.

But in a collision and panic these outlets are wholly insufficient, even if not obstructed by timbers, rubbish and broken stoves. A parlor car is in this respect worse, if anything, than an ordinary day-coach, on account of the end compartments and devious passage ways. In warm weather when fires are not used, the disabled victims can be got out through the windows or by cutting away portions of the car wall, but when the combustible inside finish takes fire, either from stoves or lamps, the whole structure is almost instantly in a blaze, preventing all escape from within or relief from without. In buildings and shops, means are provided for extinguishing fires at the start, but no such means are at hand in the case of cars, unless they are purely accidental. There can be no provisions for side openings without weakening the body framing; and, without such means of exit in the event of collision and fire, the car is a trap from which escape is a mere piece of good luck. It would be of little avail, we imagine, to urge upon railroad companies the necessity and practicability of constructing cars so they would be less combustible than they now are. The demand for frequent trains and high rates of speed must be complied with, or there is a loud chorus of complaint. With the great mass of railway travelers, safety is really a matter of secondary consideration. They want cars well warmed and lighted, regardless of any risk that may be incurred thereby; and as for a more incombustible inside finish at the sacrifice of elegant cabinet work and varnished and gilded surfaces, they are not at all clamorous for any such innovation, but seem quite content with things as they are. The recollections of Ashtabula, Angola, Revere, New Hamburg and Spuyten Duyvil, are not likely to bring about any immediate change either in the material or methods of construction, or in the warming or lighting of cars. We have already the most approved safety stoves and oil-burning lamps; but what guarantee of safety is there in these in a crashing telescoping collision? It would seem that any one of these horrible catastrophes, the last named particularly, would suggest the propriety of every passenger train being supplied with crowbars, axes or other means for breaking into cars, and also with fire extinguishers of some kind, to enable bystanders to render some effectual aid instead of witnessing the cries and death struggles of their fellow mortals in impotent despair.

THE "CAR-BUILDER" AND RAILROAD WORKING MEN.

A subscriber writes to us complaining that he has been unable to detect in the CAR-BUILDER during the past year a single word of encouragement or sympathy for the generally underpaid and overworked railroad working man, and broadly intimates that we have not only been remiss in this respect, but have shown a disposition to "toady" to superintendents and the heads of mechanical departments. We can not but think that our censorious correspondent is nearly or quite alone in his views of the character and aims of our paper; but lest there may be others who entertain similar views, we will submit a few words of comment in order that our position in this matter may be more clearly understood.

The CAR-BUILDER is not an exponent of political economy. It has nothing to do with the relations between employers and employés in the matter of wages. To volunteer any suggestions in behalf of either with a view to a better adjustment of these relations than now exists, would be getting beyond its sphere, and especially so in a season of abounding prosperity when capital and labor are so actively employed as they are now. We have, nevertheless, our own opinions in reference to the point raised by our dissatisfied subscriber, and will here and now ventilate them briefly, since he has given us such a favorable opportunity. The terms "working men" and "working classes," as they are commonly used, are vicious and misleading. They imply two distinct classes, one consisting of workers and the other of idlers, the latter by dint of superior smartness living on the sweat and toil of the former. They also imply that unskilled manual labor, as contrasted with skilled labor and a higher range of ability, is the only kind of labor that is really productive—the foundation, in fact, upon which the whole industrial structure rests. The impression is created that employers, as a class—those who organize and conduct business enterprises of every kind, the men who do the brain work and share the profits and losses—are well paid and live comfortably if not luxuriously, while the various grades of employés who work for stipulated wages by the day, month or year, are forced to live from hand to mouth upon stinted allowances altogether disproportioned to the profits of such enterprises. This impression is no doubt justified in exceptional cases which always have existed and always will; but, as a rule which is next to universal, the rewards of honest well directed labor are distributed according to skill and ability, whether such labor is physical or mental, splitting rails or preaching.

In the matter of coveted gain, the interests of capital and labor are identical; but as to how the gain shall be divided there is a radical antagonism. The law of supply and demand seems to be the only authoritative umpire for determining in every case and under all circumstances what is a fair remuneration for the inferior grades of labor. The lowest limit, of course, is the cost of living. How much above this it should be must depend upon a variety of circumstances, some of which neither employer nor employé can possibly control. Our discontented subscriber evidently thinks he is paid too little for the work he does, and that his employer gets the benefit of the difference. He does not tell us the nature of his work, nor how much pay he gets, nor how many hours he works a day, and had he done so we should hardly feel called upon to adjudicate the matter. If it will be of any help to him, however, or to others who read the CAR-BUILDER and share his views, we will say that if the present activity in car and locomotive construction and all collateral railway supply industries shall continue during the current year, the great mass of employés will be fairly entitled to increased remuneration, and especially in cases where their wages have not already been scaled up to a point very much above what they were three years ago. And we have no doubt that such increase will be granted in cases where it is manifestly just; not grudgingly and in response to clamorous demand, but from motives of self interest, if nothing higher; as no profitable service can, in the long run, be expected of men who are discontented, and to that extent demoralized.

One word more: Men who are sound in limb, in good health, and not enfeebled by age, should be able to fight the battle of life without too much reliance on the "encouragement and sympathy" of others. This is not only a free country, but it is eminently productive and prosperous, and so long as pretty nearly every body of the male gender can vote, there should be no industrial inequality, injustice or oppression that cannot speedily be rectified.

IRON CARS.

On another page will be found a notice of a meeting of railroad men held a few days ago, at the Gilbert & Bush Car Works, to inspect some new tubular iron freight cars, built under the auspices of the United States Tube Rolling Stock Company, of New York, a new organization, and successor of the La Mothe Manufacturing Co. The cars that were inspected are substantially the same in their principle of construction as those built a few years ago under the authority of the latter company, with the exception of some minor modifications and improvements in matters of detail. As usual upon such occasions, everything passed off well; nearly three hours were spent in examining the cars, and the result was an almost unqualified approval, with the confident prediction that the general introduction of iron cars for freight service was only a question of time. We have no doubt of this. But how long a time? Will it be only when the supply of timber gives out? If these cars are all that is claimed for them, which is a good deal, they should be introduced at once as fast as they can be built, and on all the roads in the country, as a mere matter of economy in reducing the expenditures and increasing the earnings of freight traffic. Judging from the testimonials in favor of the La Mothe Co.'s cars built four and five years ago, and which form a good portion of the new company's circular, we should say that the cars recently constructed, with their manifest improvements upon those first built, have not been very much overrated as to their good points, and that they are really worthy of the attention of railroad managers who are alive to the advantages of good and serviceable rolling stock. If iron cars are inevitable, we do not see but their general use will necessitate a new mechanical department on all roads for building and repairing them. This will be such a decided innovation upon the existing state of things that its progress can hardly be otherwise than slow.

STOVES AND LAMPS IN RAILWAY CARS.

It is natural when a railway accident occurs attended with loss of life by the burning of passenger cars, that there should be a good deal of animadversion on the methods of heating and lighting in which the conflagration originated. The views of the great majority of people, however, who talk and write under the spur of a sudden calamity, are apt to be crude and ill considered. They assume that something is imperfect from somebody's fault, and that the stoves and lamps might have been better and safer had proper care been exercised in their selection. Little heed is given to the fact that railway men and inventors have for a long time been engaged in devising means for warming cars without the actual presence of fire within the cars, and for lighting them without danger of conflagration under any circumstances. The fact that these efforts have thus far been unsuccessful is an evidence of the practical difficulties of the problem. It is a favorite idea with many that cars can be heated by steam from the locomotive, or from a special generator placed in the baggage car. As regards the first method, it is impracticable without such a draft on the capacity of the engine as would necessitate slower and lighter trains; and as to the second, it has been tried again and again, if we mistake not, and found to be beset with such serious mechanical difficulties as to render it impracticable except in its application to special trains.

It is safe to say that a dozen accidents a year like the recent one on the Hudson River road would not lead to the immediate disuse of stoves for car heating; but it would most certainly lead to more effective means for the prevention of such collisions between trains. There are many excellent car stoves—safety-stoves, so-called—and they are none the less worthy of their name, even if they happen to be broken in a crash, the force of which no structure of a similar kind could be expected to resist. There is a limit to the usefulness of almost every thing. Make a car stove of the best wrought-iron of any desired thickness for resisting shocks; it must have a door, perhaps two of them, and these must be opened and closed several times a day to feed and keep up the fire. The chances are, that under such circumstances, they would not always be in trim for a first-class telescoping collision, so as to keep the live coals from spilling out, especially when such collisions, almost always occur with little or no warning.

As regards lighting, we doubt whether any safer material can be used than the heavy mineral oils, unless it might be electricity, which will perhaps be utilized for car lighting at some future time. These oils are not explosive, and are certainly less dangerous than coal-gas. There is no instance that has come to our knowledge in which they have set fire to cars. The shock of a collision, the upsetting of a lamp, or an excess of oil forced through the wick, extinguishes the flame.

TWO MODEL RAILROADS.

The Boston papers, with a local pride that is very natural and not altogether unwarranted, are disposed to challenge the claim made in behalf of the Pennsylvania Railroad as being the model railway of the country, by filing a counter claim in favor of the Boston & Albany. It is not alleged that the latter road in respect to skillful management, first-class equipment and fast trains, is superior to its rival, but that it is pretty close alongside—the second road in the country, if not the first, in all essentials which pertain to a "model" in the progressive sense of the term. This high estimate of their home institution—figuratively the biggest spoke that radiates from Bunker Hill and the Hub—does not rest upon mere assertion. The road is building new passenger locomotives with steel boilers carrying 160 pounds of steam, one of which now makes the 98 miles between Boston and Springfield, with grades and curves to fight nearly all the way, in 2 hours and 20 minutes, including four stops. Its sleeping and drawing-room cars are unsurpassed in beauty of finish and in the elegance of their appointments. All the passenger cars run on steel wheels, some of them 42-inch. The steel track rails weigh 72 pounds per yard. The most improved brakes, switches, signals, couplers, and methods of heating and lighting cars and stations, are in use; and an order has recently been issued by the management for equipping all passenger and baggage cars with an axe, pinch bar and fire extinguisher, to be available in case of need. And furthermore, the B. & A. don't vaunt itself, but wears its well deserved honors modestly and without pretension.

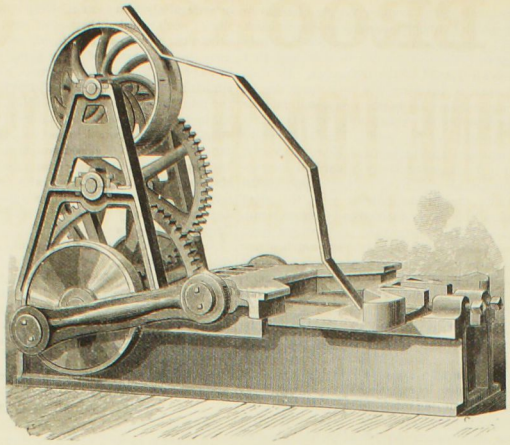
ROAD INITIAL MARKS ON FREIGHT CARS.

At the car-builders' monthly meeting for January, attention was called to the difficulty experienced by inspectors of freight cars in determining the ownership of cars marked with certain initial letters which were the same for a half dozen or more different roads, there being no other marks on such cars to indicate the particular road to which they respectively belonged. For example: If the initials alone are to be the guide, the letters **C. P. R. R.** may stand for Central Pacific; California Pacific; Canadian Pacific; Colorado Central; Carolina Central; Connecticut Central; Cotton Plant; and so on; **C. & P.** for Concord & Portsmouth; Cumberland & Pennsylvania; Cleveland & Pittsburg; Connecticut & Passumpsic; **C. & C.** for Cheraw & Chester; Carson & Colorado; Concord & Claremont; and so on in other cases. It was suggested that the difficulty could be easily remedied by having the name of the road in full stenciled in small letters on some part of the car where it would be least likely to be rubbed off. The remedy is so simple, so easily applied, and its need so obvious, that it should receive the attention it deserves, and especially in view of the fact that the number of cars belonging to the different roads is constantly increasing, which of course increases the difficulty of identification in the extensive interchange which is going on.

THE trunk lines are at peace again. It was only a question of time and resources. Whether it will be a solid and enduring peace depends on the basis yet to be agreed upon, and mutual fidelity in adhering to it. This latter condition, as experience has proved, is very unreliable in the absence of adequate penalties.

IT is asserted, but not proved, that the unfortunate express train was stopped at Spuyten Duyvil by some tipsy member of the Legislature who pulled the brake cord. If this was really so, the reckless meddler may have been a member of one of the railroad committees, who wished to satisfy himself that the cord was not a mere ornamental appendage.

IT is now confidently predicted that in five years cigars will be lighted by electricity.



MACHINE FOR BENDING ARCH-BARS.

THE engraving represents a new machine for bending the arch-bars of freight car trucks, and which does the work with much greater rapidity and accuracy than by the common method of bending the heated bars around a cast-iron form by hand, which requires considerable skill on the part of the workman. The machine can also be used for shaping and bending almost every piece of wrought-iron or steel in car, locomotive, bridge, or other construction, by simply multiplying the dies. Its operation will be readily understood by the cut.

The bars are bent between cast-iron dies, one of which is attached to a moving cross-head, the other being stationary on the end of the bed. The cross-head carrying the movable die is reciprocated by the cranks, which are operated by a train of gears driven by a belt, the cross-head moving 17 inches and making one stroke, while the tight and loose pulleys make 48 revolutions, thus giving the dies great power. The working of the machine is similar in principle to that of a drop press, except that it accomplishes by a slow but powerful movement what the press does by a single blow. Its first cost, however, is less, and it is easier on the dies. With light work, greater speed can be used. The machine is 7 ft. 9 in. in length, 3 ft. 1 in. wide, and 6 ft. 4 in. high, and weighs 5,000 pounds. Manufactured by Williams, White & Co., Moline, Ill., who may be addressed for further information.

GARDEN AND FLOWER SEEDS.—We are in receipt of "Harris' Moreton Farm Seed and Flower Catalogue," containing a list of choice field, garden and flower seeds. Mr Harris was formerly connected with the *Genessee Farmer* and *American Agriculturist*, and has a fine farm near Rochester. His seeds are exceptionally good, and are warranted fresh and sure to grow. Send for a catalogue, and then order some seeds. Catalogue sent free of charge. Address JOSEPH HARRIS, Moreton Farm, Rochester, N. Y.

EALY'S BLUE BOOK.—This is a standard reference book of credits of the hardware, iron, machinery, agricultural implements, and metal trades generally, and contains the capital and pay ratings of over 60,000 dealers and manufacturers in the United States, together with a classified reference list, which has heretofore been confined to the hardware and metal trades; but the machinery trades and railway supplies have recently been added. Furnishing detailed written reports to subscribers of the condition and paying qualities of any dealer, is an important feature of the system. Published semi-annually (Jan. and July) by the National Hardware & Stove Association, 51 Chambers street, New York, and 79 Dearborn street, Chicago. Price $75 for two books, written reports, etc. Address John W. Ealy, General Manager, 51 Chambers street, New York.

Travelers' Official Guide.—In the quantity, clearness and compactness of the information it contains, this publication surpasses all others of its class. The time schedules embrace all the roads in the United States and Canada upon which passenger trains are regularly run, and the location of all the prominent lines and systems of lines is represented by maps with the greatest fullness and clearness of detail, enabling the traveler to determine at a glance the relative advantages of different routes as respects distance, terminal and intermediate points, etc. There is also a variety of other information of great value to business men, and including a full list of railway stations, old and new names of roads, general ticket and passenger agents, and persons in charge of car service accounts. The track gauges of roads are given, full lists of road officers, official changes and appointments, ocean and inland navigation routes, and current railway news items. Each number of the *Guide* is as complete as organized effort can make it, and its monthly contents fairly reflect the growth of our extended railway system. Published by the National Railway Publication Company, 46 Bond street, New York. Price $4.00 per annum.

THE New York, Lake Erie & Western Railroad Company has bought the right to use Flagg's railroad safety gate on its line, and will soon put up gates of this pattern at crossings in Jersey City and Buffalo.

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur:

Allegany Central.—Mr. Geo. D. Chapman is General Manager and Mr. W. O. Chapman, General Superintendent.

Baltimore & Ohio.—Mr. John Thomas is appointed Superintendent of Chicago Division, with office in Chicago, Ill. He was recently Superintendent of the Cleveland & Pittsburg.

Bodie Lumber Co.—Mr. E. M. Luckett is appointed Master Mechanic and Master Car-Builder of this company's railroad, with office in Bodie, California.

Canadian Pacific.—Mr. J. M. Egan has been appointed superintendent of the Western Division, including all lines west of Lake Superior. He was recently Division Superintendent on the Chicago, Milwaukee & St. Paul.

Central of New Jersey.—Mr. W. W. Stearns, late Assistant General Superintendent, is General Superintendent in place of Mr. James Moore, who will hereafter be Chief Engineer only.

Chesapeake, Ohio & Southwestern.—Mr. Robert Meek has been appointed General Superintendent, Vice N. Monsarrat who goes to the Cleveland, Akron & Columbus.

Chesapeake & Ohio.—Mr. A. H. Wood has been appointed Assistant General Manager. He was recently Superintendent of the Chicago Division of the Wabash, St. Louis & Pacific road.

Chicago, Burlington & Kansas City.—Mr. John W. Smith has been appointed General Superintendent of this road, formerly the Burlington & Southwestern.

Chicago, Milwaukee & St. Paul.—The following appointments are announced: Mr. Chas. W. Case, Superintendent of the Hastings & Dakota Division, with headquarters at Minneapolis, Minn. Mr. Fred. D. Underwood, Superintendent of the Southern Minnesota Division, with headquarters at La Crosse, Wis. Mr. Henry R. Williams, Superintendent of the Iowa & Minnesota Division, with headquarters at Minneapolis, Minn. Mr. John Jackson, Superintendent of the Sioux City & Dakota Division, with headquarters at Sioux City Ia.

Chicago, St. Louis & New Orleans.—Mr. E. D. Anderson, Master Mechanic at McComb City, Miss., is appointed acting Superintendent of the Southern Division.

Chicago & Northwestern.—Mr. W. G. Brownson has been appointed Assistant Superintendent of this road, with office at Boone, Ia. Mr. Brownson was previously Superintendent of the Toledo, Delphos & Burlington, and Toledo, Cincinnati & St. Louis.

Cincinnati, Columbus & Hocking Valley.—This company has been formed by the re-organization of the Columbus, Washington & Cincinnati. Mr. J. E. Gimperling is President and General Manager.

Cleveland, Akron & Columbus.—Mr. N. Monsarrat is appointed General Superintendent.

Cleveland, Columbus, Cincinnati & Indianapolis.—Mr. C. C. Gale has resumed the position of Superintendent of the Indianapolis Division which he gave up when he became General Superintendent of the Indianapolis & St. Louis.

Dayton & Union.—The following is an extract from General Manager E. B. Thomas' circular of Jan. 4: The following persons are hereby appointed officers of the Dayton & Union Railroad Company: J. H. Barrett, Superintendent; J. L. Yale, Purchasing Agent; W. F. Turreff, General Master Mechanic.

Denver & Rio Grande.—Mr. George W. Ristine has been appointed Assistant General Manager, with office in Denver, Col. Mr. J. A. Myers is appointed Superintendent of Gunnison Division and branches. Office at Salida. Mr. Cole Lydon is appointed Superintendent Blue and Eagle River.

Ft. Wayne, Cincinnati & Louisville.—This Company (successor to the Ft. Wayne, Muncie & Cincinnati,) retains the officers of the former company.

Georgia Pacific—Mississippi Division.—This company is successor to the Greenville, Columbus & Birmingham. Mr. Channing M. Bolton is Superintendent.

Indiana, Bloomington & Western.—Mr. B. Warren has been appointed Master Mechanic. He was recently Master Mechanic and Acting Superintendent of the St. Louis, Alton & Terre Haute road. Mr. I. H. Wilson is appointed Superintendent of the Peoria Division, the main line from Indianapolis to Peoria.

Indiana, Illinois & Iowa.—Mr. F. M. Drake is General Manager, with office at Dwight, Ill.

Minneapolis & St. Louis.—Mr. Horace A. Towne has been appointed Superintendent of Machinery, and will have charge of all motive power, repair shops and rolling stock. Mr. Towne was recently Division Superintendent on the Northern Pacific.

Missouri Pacific.—The title of Mr. R. B. Lyle has been changed from Supply Agent to Purchasing Agent.

Mobile & Ohio.—Mr. I. G. Motley has been appointed Superintendent of the Southern Division, vice Cecil Fleming, who has gone to the Cincinnati, New Orleans & Texas Pacific, the successor of the Cincinnati Southern.

Pennsylvania Company.—Mr. Philip Bruner is appointed Superintendent of the Cleveland & Pittsburg Railroad, with office in Wellsville, O., in place of Mr. John Thomas, who has gone to the Baltimore & Ohio.

Pennsylvania Railroad.—Mr. Frank L. Sheppard has been appointed Superintendent of the Sunbury, Hazleton & Wilkesbarre Division, in place of A. B. Starr, transferred. He was lately Train Dispatcher on the New York Division.

Peoria & Farmington.—Mr. John F. Wallace is Superintendent.

Potomac, Fredericksburg & Piedmont.—Mr. W. M. Grafton is appointed Superintendent, with office in Fredericksburg, Va.

Richmond & Allegheny.—Mr. George W. Agee has been appointed Superintendent of the Allegheny Division, in place of Samuel L. Southard, resigned.

South Carolina Railway.—This company succeeds the South Carolina *Railroad* and retains the same officers.

St. Louis, Ft. Scott & Wichita.—Mr. J. D. Hill is appointed General Superintendent, in place of L. D. Latham.

St. Paul, Minneapolis & Manitoba.—Mr. H. C. Ives has been appointed Assistant General Manager in place of Mr. A. Manvel, recently promoted to be General Manager.

St. Paul & Duluth.—Mr. S. R. Stimson has been appointed General Superintendent, in place of Mr. E. Q. Sewall, who has gone to the Chicago, Milwaukee & St. Paul.

Toledo, Ann Arbor & Grand Trunk.—Mr. C. C. Dodge has been appointed Master Mechanic, with office at Ann Arbor, Mich. He was recently on the Michigan Central.

Mr. H. W. Ashley, Superintendent, will attend to the purchase of supplies.

Toledo, Delphos & Burlington.—The following is from a circular dated Toledo, O., Jan. 1:

"Mr. J. H. Weller, Superintendent Southeastern Division, having tendered his resignation, Mr. R. B. Jones has this day been appointed Superintendent of that division, with office at Dayton."

Wabash, St Louis & Pacific.—The office of General Manager is abandoned. Mr. John C. Gault has been appointed Second Vice-President, and will take charge of the traffic of the company. The freight and passenger departments will report directly to him. The offices of General Superintendent of Eastern Division, Western Division and Chicago & Iowa Division are abandoned, and Col. Robert Andrews assumes the duties of General Superintendent of the entire lines of the company, with headquarters at St. Louis. Mr. W. F. Merrill has been appointed Assistant General Superintendent, with headquarters also at St. Louis. Mr. D. G. Moore has been appointed Superintendent of the Cairo Division.

Western & Atlantic.—Mr. Robert A. Anderson, who succeeds Gen. Wm. McRae on this road, has the title of General Superintendent only. Gen. McRae's title was General Manager and Superintendent.

Wheeling & Lake Erie.—J. S. Oliver is General Manager; and L. James Superintendent of Machinery and Car Departments. The offices are now in Norwalk, O., but will shortly be removed to Toledo.

Employment.

Advertisements will be inserted under this heading for one dollar for each insertion.

WANTED.—A man holding the position of General Foreman in a Railway Locomotive Department desires a position in same capacity or as Master Mechanic. Can furnish good references from general manager and master mechanic of road where he is now employed. A change is desired on account of health. Address G. F., office of NATIONAL CAR-BUILDER, 5 Dey street, New York.

WANTED.—A situation as Master Mechanic or Foreman by a man who has had seven years' experience as Master Mechanic on a leading road of the State of New York. Would like to open correspondence with railway managers or superintendents with a view to obtaining employment. References as to character and ability, first-class. Address R. R., 14 Church street, Syracuse, N. Y.

WANTED.—A situation as stenographer and type-writer, by a young man who is also a practical machinist, having 13 years' experience in railroad shops. Can furnish first-class references. Address STENOGRAPHER, Hornellsville, N. Y.

WANTED.—In a British Colony, a General Superintendent for a railway now about 400 miles long, but to be about 500 and 600 miles long hereafter. He must be thoroughly competent, energetic and experienced in all that pertains to the management of traffic, and of good personal character. Address, stating age, record in detail of career, railways employed on and time; also references and terms,

"RAILWAY," care of the *Railroad Gazette*,
73 Broadway, New York.

WANTED.—In a British Colony, a Chief Engineer for railway 500 to 600 miles long, partly in operation and partly to be constructed. He must be thoroughly competent, energetic and experienced in railway location, construction, repairs and maintenance, and of high personal character. Address, stating age and record in detail of professional career, names of works engaged upon, employers, references, and terms,

"RAILWAY," care of *Railroad Gazette*,
73 Broadway, New York.

CONTINUOUS DRAW-BAR PATENTS.

The following circular has been issued by the Secretary of the Western Railroad Association:

CHICAGO, Sept. 9, 1880.

To the Members of the Association:

GENTLEMEN: Claims have been pending for several years that the Continuous Draw-Bar, sold by the Continuous Draw-Bar Company under the Middleton and the Griffith and Patterson patents, is an infringement of patent 71,580, granted 3d December, 1867 (re-issue No. 8,085, granted 19th February, 1878), to Edward L. Caum.

This Association has continuously advised against entertaining this claim, but to quiet all questions, and at our instigation, the Continuous Draw-Bar Company has recently purchased the Caum patent, its owner inserting in the assignment a full and absolute release to all the members of the Eastern and Western Railroad Associations from any and all liability for, or on account of, any infringement heretofore of said patent.

Yours truly,
J. H. RAYMOND, Secretary, etc.

CLARENCE BROOKS & CO.

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RAILWAY CAR AND FINE COACH VARNISHES.

Cor. West and West 12th sts., New York.

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BALTIMORE & OHIO RAILROAD CO., N. S. Hill, Purchasing Agent, Baltimore Md.
CHICAGO & ALTON RAILROAD CO., A. V. Hartwell, Purchasing Agent, Chicago, Ill.
CHICAGO & NORTHWESTERN RAILROAD CO., R. W. Hamer, Purchasing Agent, Chicago, Ill.
LEHIGH VALLEY RAILROAD CO., L. Chamberlin, Purchasing Agent, Philadelphia, Pa.
NORTHERN RAILROAD OF CANADA, F. W. Cumberland, Superintendent, Toronto, Ont.
NAUGATUCK RAILROAD CO., G. W. Beach, Superintendent, Waterbury, Conn.
PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD CO., S. A. Hodgman, Superintendent of Motive Power, Wilmington, Del.
NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO., R. N Dowd, Commissary, New Haven, Conn.
UNION PACIFIC RAILROAD CO., A. D. Clark, Purchasing Agent, Omaha, Neb.
KANSAS " " " "
CHICAGO, BURLINGTON & QUINCY RAILROAD CO., Wm. Irving, Purchasing Agent Chicago, Ill.
LOUISVILLE, CINCINNATI & LEXINGTON RAILROAD CO., Wm. Mahl, Purchasing Agent, Louisville, Ky
GRAND TRUNK RAILWAY N. Wall, Port Huron, Mich.
LITTLE ROCK & FORT SMITH RAILROAD CO., T. Hartman, Purchasing Agent, Little Rock, Ark.
GILBERT & BUSH CO., Troy, N. Y. } Railroad Car Builders.
WASON MANUFACTURING CO., Brightwood, Mass. }
BILLMEYER & SMALL MANUFACTURING CO., York, Pa. }
JACKSON & SHARP CO., Wilminton, Del. }
BARNEY & SMITH MANUFACTURING CO., Dayton, O. }

The advantages derived from the use of such Special Colors are many, a few of which are found below: **ABSOLUTE UNIFORMITY OF SHADE, DURABILITY,** as we use perfectly pure materials. **SAVING OF MONEY,** because of small quantity required. **SAVING OF TIME,** in the putting on of the same. **SAVING OF LABOR AND MATERIAL,** as no extra amount of Varnish will be required to hide a sanded surface **LARGER DEGREE OF CERTAINTY** that there will be an absence of cracked work, as our mixtures are all uniform, being done by weight only.

We make any desired shade, it only being necessary that purchasers furnish us with sample of color desired, stating the time they would like to have the paint dry in.

We shall be glad to furnish samples and give prices to any who may wish to avail themselves of the above advantages.

Very respectfully,

JOHN W. MASURY & SON, New York and Chicago.

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THREE CANVASSERS FOR SUBSCRIPTIONS, whereby we are enabled to Gnarantee to our Advertisers at least 500 New Subscribers Each Month, making it the BEST RAILROAD PAPER TO ADVERTISE IN.

REACHING ALL RAILROAD OFFICERS OF THE OPERATING DEPARTMENTS IN THE UNITED STATES AND CANADA.

We are permitted to publish the following letter, one of many we have received of similar purport:

BOSTON & ALBANY RAILROAD COMPANY, ALLSTON, MASS., Jan. 31, 1881.

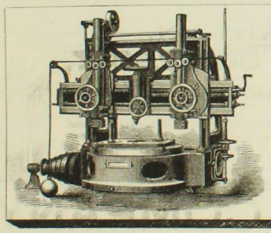
R. M. Van Arsdale, Esq., Proprietor National Car-Builder, 5 Dey street, New York:

DEAR SIR: Inclosed please find one dollar in renewal of my subscription to your paper. I am much pleased with its manifest improvement during the past year, making it more and more valuable for the information it contains in the interest of railway rolling stock; and I also think it is the best paper for the use of business men in reaching the supply departments of railroads. Wishing you continued success, I am

Yours truly,
F. D. ADAMS, Master Car-Builder Boston & Albany R. R.

SUBSCRIPTION, ONE DOLLAR PER YEAR.

ADVERTISING RATES AND OTHER INFORMATION MAY BE HAD AT THE OFFICE.



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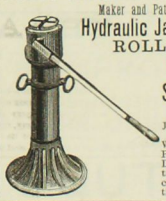

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We make 27 varieties of these Jacks, and have more in process of construction.

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For Ventilation of

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WATER CLOSETS.

Twenty-five Sizes, from 2 in. to 48 in. inclusive.

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FOR

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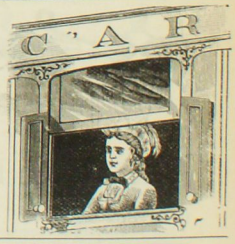

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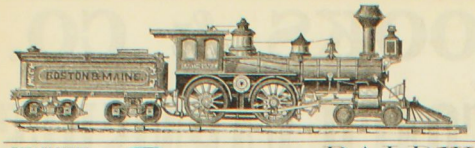

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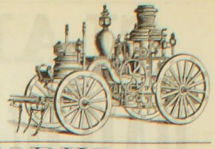

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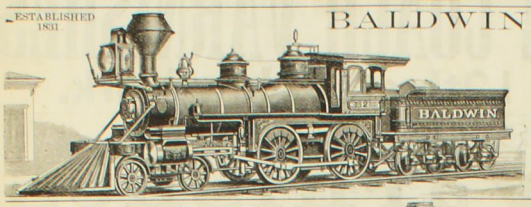

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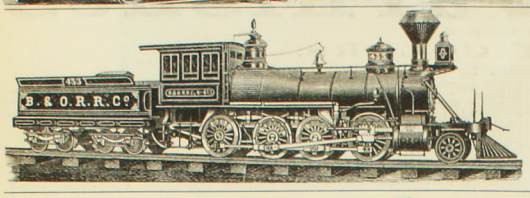

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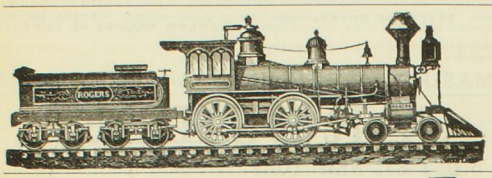

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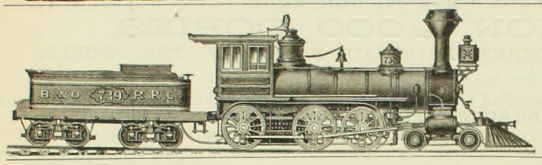

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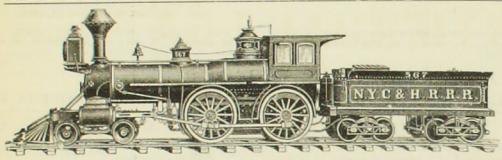

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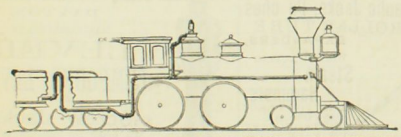

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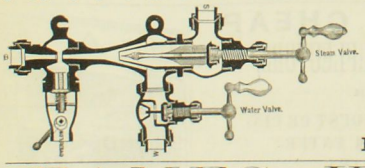

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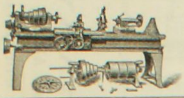

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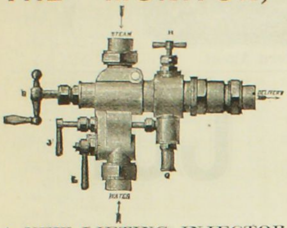

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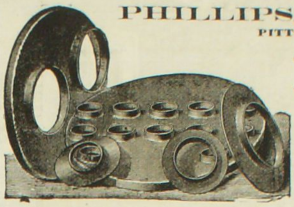

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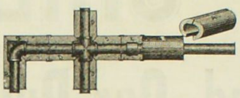

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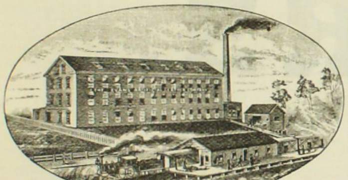

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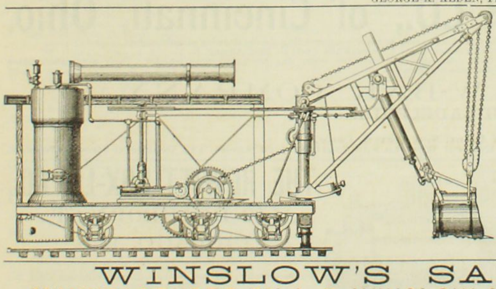

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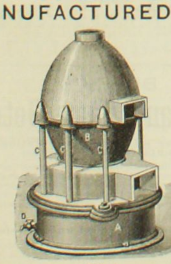

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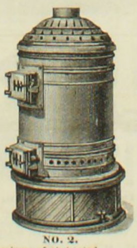

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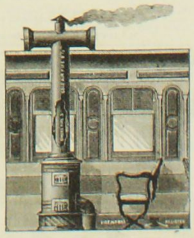

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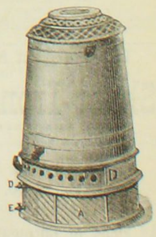

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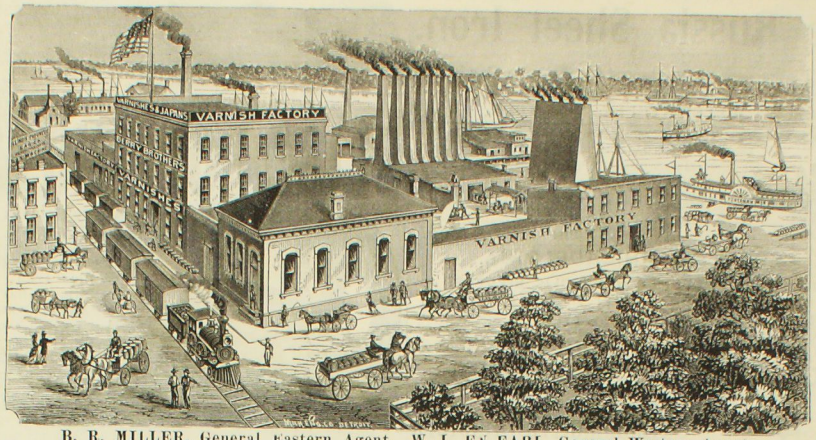

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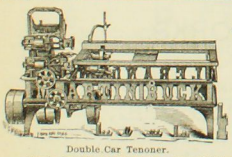

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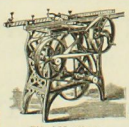

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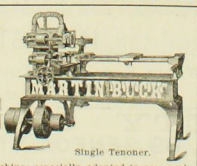

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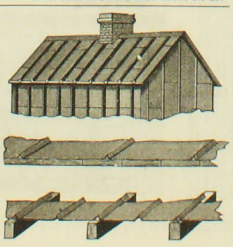

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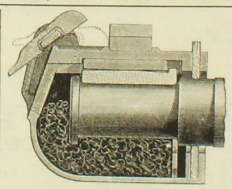

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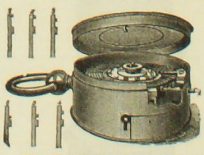

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Anderson, Leb. & St. L. R. R. 4-9 g. 19 m. 2 lo. 20 c.
J. A. Larnerd, *Rec. & Supt* .... Anderson, Ind.
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt*..Annapolis, Md.
John L. Beall, *M. Mach* .... Annapolis, Md.
Arkansas Midland R. R. 3-6 g. 48 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man*...Helena, Ark.
J. B. Johnson, *M. M. & M. C. B*...Helena, Ark.
Ashland Coal & Iron Ry. 4-8½ g. 14 m. 2 lo. 122 c.
W. F. Gaylord, *Gen. Supt* .... Ashland, Ky.
Ashtabula & Pittsburgh Ry. (*See Penna. Co.*)
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt*..Spart'b'g, S.C.
M. Fraser, *M. M* .... Spartanburg, S. C.
W. B. Brown, *M. C. B* .... Spartanburg, S. C.
Atchison, Topeka & Santa Fé. R. R.
4-8½ g. 1,846 m. 203 lo. 8,108 cars.
C. C. Wheeler, *Gen. Man* .... Topeka, Kan.
W. S. Mellen, *Asst. Gen. Supt* .... Topeka, Kan.
D. J. Chase, *Supt* .... Topeka, Kan.
F. M. Smith, *Pur. Agt* .... Topeka, Kan.
Geo. Hackney, *Supt. Lo. & Car. Dept* do.
Clem. Hackney, *M. M* .... Topeka, Kan.
Eastern Div.: C. M. Rathbun, *Supt*..Topeka, Kan.
Henry Hull, *G. F. Car Dept* ..... Topeka, Kan.
John Fagan, *M. M* .... Atchison, Kan.
J. M. Smith, *M. M* .... Kansas City, Mo.
W. W. Wheeler, *M. M* .... Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt*.Nickerson, Kan.
W. Y. Johnson, *M. M* .... Nickerson, Kan.
J. Q. Adams, *M. M* .... Dodge, Kan.
Col. Div.: W. W. Borst, *Supt* .... La Junta, Col.
A. C. Stiles, *M. M* .... La Junta, Col.
H. W. Somers, *M. M* .... Raton, N. M.
Las Vegas D.: T. J. Seeley, *Supt*.Las Vegas, N.M.
L. H. Waugh, *M. M* .... Las Vegas, N. M.
Rio G. Div.: F. Leach, Jr., *Supt*.San Marcial, N.M.
M. C. Wheeler, *M. M* .... Wallace, N. M.
T. Clyde, *M. M* .... San Marcial, N. M.
H. P. Olcott, *M. M* .... Deming, N. M.
Atlanta & West Point R. R. (*See Western of Ala.*)
Atlantic, Gulf & West India Transit R. R. 5 g. 203 m.
D. E. Maxwell, *Gen. Supt* .... Fernandina, Fla.
Atlantic, Tenn. & Ohio R. R. 4-8½ g. 46 m. 2 lo. 26 c.
J. J. Gormley, *Supt* .... Charlotte, N. C.
Atlantic & Pacific R. R. 4-8½ g. 286 m.
F. W. Smith *Gen. Supt* ...... Albuquerque, N. M.
B. W. Angell, *Div. Supt* .... Albuquerque, N. M.
Geo. Chalender, *Supt. M. P. & M.* do.
D. B. Sibley, *Pur. Agt* .... Chicago, Ill.
Augusta & Knoxville R. R. 30 miles.
A. J. Twiggs, *Gen. Supt & M. M.*.Augusta, Ga.

B

Baltimore & Ohio R. R.
4-8½ g. 1,539 m. 546 lo. 14,862 cars.
N. S. Hill, *Pur. Agt* .... Baltimore, Md.
E. Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, *Mast. Trans* ... Baltimore, Md.
J. C. Davis, *Mast. of Mach* ..... Baltimore, Md.
A. J. Cromwell, *Asst. M. of M*..Baltimore, Md.
L. Packard, *M. C. B* .... Baltimore, Md.
I. N. Kalbaugh, *M. M* .... Baltimore, Md.
Wm. Edwards, *M. M* ...... Martinsburgh, Va.
Sam. Houston, *M. M* .... Piedmont, Va.
Robert Maxwell, *M. M* .... Cumberland, Va.
S. B. Crawford, *M. M* .... Grafton, W. Va.
Alex. Laird, *M. M* .... Parkersburg, W. Va.
Chas. Hirsch, *M. M* .... Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt*...Pittsburg, Pa.
J. E. Sampsell, *M. of Mach*...Connelsville, Pa.
Trans-Ohio Divs.: B. Dunham, *G. Man*...Newark, O.
W. H. Harrison, *Mast. of Mach* ..... Newark, O.
E. L. Weisgerber, *M. M* .... Newark, O.
H. M. Ingler, *M. M* .... Bellaire, O.
O. B. Perkins, *M. M* .... Zanesville, O.
Andrew Beckert, *M. M* .... Sandusky, O.
F. J. Gunther, *M. M* .... Chicago Junction, O.
Chi. Div.: John Thomas, *Supt* .... Chicago, Ill.
Benj. Lowther, *M. M* .... Garrett, Ind.
W. C. Wilkinson, *M. M* .... Kingston, Ill.
Baltimore & Potomac R. R. (*See Penna. R. R.*)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt* .... Bangor, Me.
C. S. Nason, *M. M* .... Bangor, Me.
Barclay R. R. 4-8½ g. 16 miles.
J. B. Judd, *Supt* .... Towanda, Pa.
Bath & Hammondsport R. R. 3 g. 9 m. 1 lo. 15 cars.
M. H. Hall, *Supt* .... Hammondsport, N. Y.
Allen Wood, *M. M* ...... Hammondsport, N. Y.
Battle Mountain & Lewis Ry. 3 gauge 11 miles.
L. B. Ball, *Supt. & Pur. Agt* .... Lewis, Nev.
Bedford, Springville, Owensburg & Bloomfield Ry.
3 g. 41 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. Geo. Elliott, *M. M* .... Bedford, Ind.
Richard G. Elliott, *M. C. B* .... Bedford, Ind.
Bellaire & South-Western Ry. Co. 3 g. 42 m. 3 lo. 29 c.
S. J. Cochren, *Gen. Man* .... Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 2 lo. 35 cars.
R. G. Ford, *Supt* .... Bellwood (P. O.), Pa.
Belt R. R. 4-8½ g. 12 m. 10 lo.
M. A. Downing, *Gen. Man* .... Indianapolis, Ind.
Bennington & Rutland Ry. 4-8½ g. 9 m. 10 lo. 214 c.
F. C. White, *Supt. & Pur. Agt*..Bennington, Vt.
G. W. Blanchard, *M. M* .... Rutland, Vt.
Bodie Lumber Co. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt* ..... Bodie, Cal.
E. M. Luckett, *M. M. & C. B* .... Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 7 lo. 107 c.
H. M. Witter, *Supt. & Pur. Agt*.Worcester, Mass.
Chas. F. Brigham, *M. M* ...... Worcester, Mass.
Boston, Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 34 lo. 677 cars.
James A. Dodge, *Gen. Man* .... Plymouth, N. H.
J. Thos. Vose, *Pur. Agt* .... Boston, Mass.
R. Adams, *M. M* .... Lake Village, N. H.
G. A. Ferguson, *Asst. M. M*...Lake Village, N. H.
L. D. Pickering, *M. C. B*....Lake Village, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 39 m. 8 lo. 1,080 cars.
W. L. Burt, *Pres. & Gen. Man* .... Boston, Mass.
J. L. Wellington, *Gen. Supt*.Mechanicville, N. Y.
Boston, Lowell & Concord R. Rs.
4-8½ g. 360 m. 110 lo. 2,211 cars.
H. C. Sherburne, *Gen. Man* ...... Boston, Mass.
F. H. Nourse, *Pur. Agt* .... Boston, Mass.
J. N. Lauder, *Supt. Roll. Stock* .Concord, N. H.
Boston & Lowell Div.:
J. F. Crockett, *M. Trans* .... Boston, Mass.
Concord Divs.:
H. E. Chamberlain, *Supt* ...... Concord, N. H.
J. T. Gordon, *M. M. & C. B* ... Concord, N. H.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 5 lo. 46 c.
E. H. Whorf, *Supt. & Pur. Agt*...Boston, Mass.
J. L. Folsom, *M. M* .... Boston, Mass.
John Coghlan, *M. C. B* .... Boston, Mass.
Boston, Winthrop & Pt. Shirley. 3 g. 2½ m. 1 lo. 8 c.
C. A. Parks, *Pres. & Man* .... Boston, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 248 lo. 6,012 c.
C. O. Russell, *Gen. Supt* ...... Springfield, Mass.
W. H. Barnes, *Asst. Supt* .... Boston, Mass.
A. B. Underhill, *Supt. M. P*...Springfield, Mass.
F. D. Adams, *M. C. B* .... Allston, Mass.
W. H. Russell, *Div. Supt* .... Albany, N. Y.
Horace Eddy, *For. M. Sh*..Springfield, Mass.
J. B. Weston, *For. C. Sh*...Springfield, Mass.
G. H. Colby, *For. M. Sh* .... Boston, Mass.
T. B. Purvis, *For. M. Sh* ... Greenbush, N. Y.
J. E. Doran, *For. C. Sh* .... Greenbush, N. Y.
Boston & Maine R. R. 4-8½ g. 206 m. 84 lo. 2,112 c.
J. T. Furber, *Gen. Supt* .... Boston, Mass.
Wm. Smith, *M. M* .... Boston, Mass.
D. C. Richardson, *M. C. B* ..... Lawrence, Mass.
Boston & N. Y. Air Line. 4-8½ g. 53 m. 9 lo. 156 c.
Jos. H. Franklin, *Supt* .... New Haven, Conn.
Boston & Providence R. R. 4-8½ g. 67 m. 47 lo. 866 c.
A. A. Folsom, *Gen. Supt* .... Boston, Mass.
Geo. Richards, *M. M* .... Roxbury, Mass.
Jno. Lightner, *M. C. B* .... Roxbury, Mass.
Bowling Green R. R. 4-8½ g. 5 m. 2 lo. 2 cars.
W. A. Wiggin, *Gen. Man* .... Bowling Green, O.
H. B. Higgins, *Supt. & M. M.* Bowling Green, O.
Bradford R. R. (*See Olean, B. & W.*)
Bradford, Bordell & Kinzua R. R. 3 g. 30 m. 6 lo. 80 c.
B. C. Williams, *Supt. & Pur. Agt*..Bradford, Pa.
John Delaney, *M. M. & C. B* ...Bradford, Pa.
Bradford, Eldred & Cuba R. R.
C. D. Williams, *Supt. & P. A*..Wellesville, N. Y.
Breakwater & Frankford R. R. (*See Junc. & Break.*)
Brighthope Ry. 4-8½ g. 21 m. 1 lo. 48 cars.
A. Cary, *Gen. Man* .... Winterpock, Va.
Brooklyn, Bath & Coney Is. 4-8½ g. 7 m. 6 lo. 33 c.
Geo. A. Gunther, *Gen. Man*....Brooklyn, N. Y.
B'klyn, Flatbush & Coney Is. 4-8½ g. 7½ m. 7 lo. 52 c.
Robert White, *Supt* .... Brooklyn, N. Y.
Brooklyn & Rockaway Bch. 4-8½ g. 3½ m. 3 lo. 18 c.
Wm. Warner, *Supt* .... E. New York, N. Y.
Brunswick & Albany R. R. 5 g. 172 m. 13 lo. 170 c.
R. D. Meader, *Supt* .... Brunswick, Ga.
Bucksport & Bangor R. R. 3 g. 18 m. 2 lo. 35 cars.
L. L. Lincoln, *Supt* .... Bucksport, Me.
Buffalo, N. Y. & Phila. Ry. 4-8½ g. 121 m. 34 lo. 2,436 c.
Geo. S. Gatchell, *Gen. Supt* ...... Buffalo, N. Y.
J. H. Poole, *Pur. Agt* .... Buffalo, N. Y.
Allen Vail, *M. M. & M. C. B* ..... Buffalo, N. Y.
Buff., Pittsburgh & W'n R. R. 4-9 g. 165 m. 33 l. 506 c.
Oliver Watson, Jr., *Gen. Supt* ..... Oil City, Pa.
E. H. Witter, *Pur. Agt* .... Buffalo, N. Y.
H. J. Bookhammer, *M. M* .... Oil City, Pa.
John Monks, *M. C. B* .... Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 644 m. 62 lo. 2,120 cars.
C. J. Ives, *Gen. Supt* .... Cedar Rapids, Ia.
Robt. Williams, *Supt* .... Cedar Rapids, Ia.
T. Stickney, *Pur. Agt* .... Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B.* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 36 m. 3 lo. 61 c.
G. L. Linsley, *Gen. Man. & Supt*.Burlington, Vt.
F. G. Brownell, *M. M. & P. A*...Burlington, Vt.
Burlington & Mo. Riv. R. R. (in Neb.) (*See C., B. & Q.*)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 85 c.
John T. Gerry, *Supt* .... Burlington, Ia.
Burlington & Ohio River R. R.
G. P. Merrill, *Gen. Man. & Pur. Agt*.Chicago, Ill.
John K. Lape, *Supt. of Equip* ..... Chicago, Ill.

C

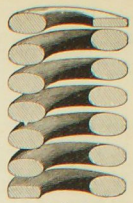
Cairo & St. Louis R. R. 3 g. 146 m. 22 lo. 708 cars.
Chas. Hamilton, *Gen. Supt* ..... St. Louis, Mo.
R. M. Pringle, *M. M* .... East Carondelet, Ill.
Camden & Atlantic R. R. 4-8½ g. 79 m. 16 lo. 264 c.
F. A. Lister, *Supt & Pur. Agt* .... Camden, N. J.
Rufus Hill, *M. M* .... Camden, N. J.
Samuel Wills, *M. C. B* .... Camden, N. J.
Canada Southern Ry. 4-8½ g. 403 m. 89 l. 3,367 c.
W. P. Taylor, *Gen. Man* .... Buffalo, N. Y.
A. F. Howland, *Pur. Agt* ..... St. Thomas, Ont.
W. A. Short, *Gen. M. M* .... St. Thomas, Ont.
John Ortton, *Gen. M. C. B* ..... St. Thomas, Ont.
Can. Div.: W. E. Carroll, *Supt*..St. Thomas, Ont.
Robert Potts, *M. C. B* .... St. Thomas, Ont.
U. S. Div.: E. P. Murray, *Supt* .... Toledo, O.
O. P. Dunbar, *M. M* .... Grosse Isle, Mich.
Canadian Pacific R. R. 4-8½ g. 551 m. 26 lo. 473 c.
Eastern Div. 240 m. 16 lo. 276 cars.
A. Baker, *Gen. Supt* .... Ottawa, Ont.
T. Blackwell, *Mech. Supt* ..... Brockville, Ont.
Western Div. 311 m. 10 lo. 207 cars.
W. C. Van Horne, *Gen. Man*.Winnipeg, Man.
J. M. Eagan, *Supt* .... Winnipeg, Man.
W. R. Baker, *Pur. Agt* .... Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 3 lo. 31 c.
L. C. Jones, *Gen. Supt* .... Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B*. Fayetteville, N. C.
Carolina Cen. R. R. 4-8½ g. 242 m. 24 lo. 456 cars.
V. Q. Johnson, *Gen. Supt* .... Wilmington, N. C.
C. H. Roberts, *Pur. Agt* ..... Wilmington, N. C.
James Maglenn, *M. of Mach*..Laurinburg, N. C.
S. R. Ethridge, *M. C. B* .... Laurinburg, N. C.
Carson & Colorado R. R. (*See Va. & Truckee.*)
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 577 c.
C. W. Chapman, *Supt. & P. A*.Catasauqua, Pa.
Thos. E. Evans, *M. M* .... Catasauqua, Pa.
Chas. J. Holbach, *M. C. B* ..... Catasauqua, Pa.
Central and South-Western Railroads (Ga.).
5 g. 975 m. 127 lo. 1,779 cars.
W. G. Raoul, *V. P. and G. Man*.Savannah, Ga.
Wm. Rogers, *Gen. Supt* .... Savannah, Ga.
Henry Yonge, *Pur. Agt* .... Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M* ...... Savannah, Ga.
R. M. Barthlemess, *M. C. B* .... Savannah, Ga.
So.-West'n Div.: W. F. Shellman, *Supt*.Macon, Ga.
D. M. Gugel, *M. M* .... Macon, Ga.
James A. Knight, *M. C. B* .... Macon, Ga.
Central R. R. of N. J. 4-8½ g. 544 m. 294 lo. 27,198 c.
Joseph S. Harris, *Gen. Man*...New York, N. Y.
B. W. Burnett, *Pur. Agt* ...... New York, N. Y.
W. H. Stearns, *Gen. Supt* ..... Elizabeth, N. J.
Cen Div.: Wm. Woodcock, *M. M*...Elizabeth, N. J.
Geo. Hackett, *M. C. B* .... Elizabeth, N. J.
N. J. So. Div.: R. Blodgett, *As't G. S.* Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *A. G. Supt* Mauch Chunk, Pa.
L. C. Brastow, *M. M. & C. B* ...... Ashley, Pa.
Central Iowa Ry. 4-8½ g. 191 m. 37 lo. 1,487 cars.
D. N. Pickering, *Gen. Supt*...Marshalltown, Ia.
John Player, *M. M* .... Marshalltown, Ia.
T. L. Seevers, *M. C. B* .... Marshalltown, Ia.
Central Pac. R. R. 4-8½ g. 2,777 m. 296 lo. 7,277 c.
A. N. Towne, *Gen. Supt* .... San Francisco, Cal.
J. A. Fillmore, *A. G. Supt*..San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt*..Sacramento, Cal.
A. J. Stevens, *Gen. M. M* .... Sacramento, Cal.
Benj. Welch, *Gen. M. C. B* .... Sacramento, Cal.
G. J. Turner, *M. C. B* .... Sacramento, Cal.
West'n; Visalia; Tulare Divs. and North'n R. R.:
A. D. Wilder, *Supt* .... W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.).W. Oakland, Cal.
W. D. Ludlow, *M. C. B.* (W. Div.) do.
S. J. Johnson, *M. M.* (T. Div.) ..... Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.).S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
R. H. Pratt, *Supt* .... Sacramento, Cal.
M. W. Cooley, *M. M* .... Sacramento, Cal.
Phil. Douglas, *For. Car Sh*. Sacramento, Cal.
Truckee Div.: Frank Free, *Supt* Wadsworth, Nev.
Geo. Gregg, *M. M* .... Wadsworth, Nev.
Wm. McPherson, *F. Car Sh*..Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt*.Carlin, Nev.
W. F. Smith, *M. M* .... Carlin, Nev.
J. C. Doughty, *For. Car Sh* .... Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt* ..... Ogden, Utah.
James Lamb, *M. M* .... Terrace, Utah.
A. Sherburne, *For. Car Sh* .... Ogden, Utah.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt* .... Los Angeles, Cal.
James Velsir, *M. M* .... Los Angeles, Cal.
J. S. Young, *For. Car Sh* .... Los Angeles, Cal.
Arizona Div. (So. Pac.):
A. A. Bean, *Asst. Supt* .... Tucson, Ariz.
Rio Grande and El Paso Divs. (So. Pac.):
J. Campbell, *Ass't Supt* .... El Paso, Texas.
H. C. Standish, *For. Sh* .... El Paso, Texas.
Central Vermont R. R. 4-8½ g. 548 m. 132 lo. 2,522 c.
J. W. Hobart, *Gen. Supt* .... St. Albans, Vt.
J. M. Foss, *A. G. S. & S. of M. P. & M.* St. Albans, Vt.
No. Div.: J. B. Futvoye, *Supt* ..... St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt* .... Rutland, Vt.
N. L. Davis, *M. M. & C. B* .... Rutland, Vt.
New London & No'n R. R. 143 m. 22 lo. 303 c.
G. W. Bentley, *G. Supt. & P. A*...New London, Ct.
I. W. Dow, *M. M* .... New London, Ct.
S. O. Banks, *M. C. B* .... New London, Ct.
Chagrin Falls & Southern R. R. 3 g. 6 miles.
J. W. Williams, *Supt* .... Chagrin Falls, O.
Charleston & Savannah Ry. 5 g. 108 m.
C. S. Gasden, *Gen. Supt* .... Charleston, S. C.
H. A. Ulmo, *M. M* .... Charleston, S. C.
J. D. Murphy, *M. C. B* .... Charleston, S. C.
Charlotte, Columbia & Augusta R. R. (*See Rich. & D.*)
Chateaugay R. R. 3 g. 34 m. 6 lo. 125 cars.
F. N. Corbin, *Supt* .... Plattsburg, N. Y.
Chatham Branch Ry. 4-8½ g. 9 m. 1 lo. 2 cars.
J. B. Snowball, *Manager* .... Chatham, N. B.
Chattaroi Ry. 4-8½ g. 43 miles 11 loco. 483 cars.
C. H. Rockwell, *Gen. Man* .... Ashland, Ky.
A. T. Daniel, *M. M* .... Ashland, Ky.
Joseph Burley, *M. C. B* .... Ashland, Ky.
Cheraw & Chester R. R. 3 g. 30 m. 3 lo. 38 cars.
W. H. Harding, *Pres. & Supt* ..... Chester, S. C.
Cheraw & Darlington R. R. (*See Wil. & Wel.*)
Cheraw & Salisbury R. R. (*See Wil. & Wel.*)
Cherokee R. R. 3 g. 37 m. 5 lo. 50 cars.
John Postel, *Manager* .... Atlanta, Ga.
C. E. Scruten, *M. M. & C. B* .... Cedartown, Ga.
Chesapeake, Ohio & So.-W'n. 5 g. 112 m. 8 lo. 102 c.
R. Meek, *G. S. & Pur. Agt* Elizabethtown, Ky.
G. M. Taylor, *M. M. & C. B.* .... Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 437 m. 86 l. 3,111 c.
C. W. Smith, *Gen. Man* .... Richmond, Va.
A. H. Wood, *A. Gen. Man* .... Richmond, Va.
A. S. Emmons, *Pur. Agt* .... Richmond, Va.
John McFarland, *Supt. M. P. & M.* Richmond, Va.
T. L. Chapman, *A. S. M. P. & M.* Richmond, Va.
Eastern Div.: E. T. Smith, *Supt*..Richmond, Va.
J. N. King, *M. C. B* .... Richmond, Va.
Hunt. Div.: W. P. Harris, *Supt.*; and
H. C. Bassinger, *M. C. B.* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt*..Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 30 lo. 499 cars.
R. Stewart, *Gen. Man* .... Keene, N. H.
H. H. Stone, *Pur. Agt* .... Keene, N. H.
F. A. Perry, *M. M* .... Keene, N. H.
A. E. Howard, *G. For. Car Sh*. ..Keene, N. H.
Chester & Lenoir Ry. 3 g. 50 m. 3 lo. 23 cars.
James Mason, *Supt* .... Yorkville, S. C.
T. P. Beard, *M. M* .... Yorkville, S. C.
Chicago, Burlington & Kan. City Ry. 4-8½ g. 181 m.
J. W. Smith, *Gen. Supt* .... Keokuk, Ia.
A. B. Allen, *M. C. B* .... Farmington, Ia.
Chicago, Burlington & Quincy R. R.
4-8½ g. 2,873 m. 441 lo. 16,499 cars.
T. J. Potter, *Gen. Man* .... Chicago, Ill.
H. B. Stone, *Supt. Lo. & Car Dept*..Chicago, Ill.
Wm. Forsyth, *Mech. Eng* .... Aurora, Ill.
(1) C., B. & Q., East of Mo. Riv. 1,938 miles.
H. B. Stone, *Gen. Supt* .... Chicago, Ill.
Wm. Irving, *Pur. Agt* .... Chicago, Ill.
Ill. Divs.: J. D. Besler, *Supt* .... Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt* ..... Aurora, Ill.
L. E. Johnson, *M. M* .... Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt*.Galesburg, Ill.
Robert Colville, *M. M* .... Galesburg, Ill.
St. L. Div.: W. R. Crumpton, *Supt*.St. Louis, Mo.
A. Forsyth, *M. M* .... Beardstown, Ill.
Ia. & Mo. Divs.: K. H. Wade, *Supt*...Burlington, Ia.
East. Div.: C. M. Levy, *Supt* ...... Burlington, Ia.
Joel West, *M. M* .... Burlington, Ia.
Mid. Div.: D. T. Bacon, *Supt* .... Ottumwa, Ia.
West'n Div.: W. T. Ryder, *Supt* .... Creston, Ia.
C. W. Eckerson, *M. M* .... Creston, Ia.
(2) C., B. & Q., West of Mo. Riv. 935 miles.
G. W. Holdredge, *Gen. Supt* .... Omaha, Neb.
Geo. Hargreaves, *Pur. Agt* .... Omaha, Neb.
D. Hawksworth, *Gen. M. M*..Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
J. B. Phillippi, *Supt* .... Lincoln, Neb.
O. R. Newton, *M. M* .... Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt* ...... Hastings, Neb.
A. & N. Div.: J. McConniff, *Supt*...Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 3,951 m. 425 lo. 13,659 cars.
S. S. Merrill, *Gen. Man* .... Milwaukee, Wis.
W. C. Van Horne, *Gen. Supt*...Milwaukee, Wis.
J. T. Crocker, *Pur. Agt* .... Milwaukee, Wis.
J. M. Lowry, *Gen. M. M* .... Milwaukee, Wis.
La Crosse; Pr. du Chien; Wis. Val.; Chi.; and
Chi. & Pac. Divs.:
H. C. Atkins, *Supt* .... Milwaukee, Wis.
John Bailie, *M. C. B* .... Milwaukee, Wis.
Northern Div.: L. B. Rock, *Supt*..Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B*..Milwaukee, Wis.
So.-Wn Divs.: D. A. Olin, *Supt* .... Racine, Wis.
John Taylor, *M. M* .... Racine, Wis.
E. A. Eddy, *M. C. B* .... Racine, Wis.
Lines West of Mississippi River:
C. H. Prior, *A. Gen. Supt*....Minneapolis, Minn.
H. & D. Div.: C. W. Case, *Supt*.Minneapolis, Minn.
J. O. Pattie, *M. M* .... Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* do.
So. M. Div.: F. D. Underwood, *Supt*.La Crosse, Wis.
Ia. & Da. Div.: G. W. Sanborn, *Supt*.Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, *Supt*.Sioux City, Ia.
F. H. Moulton, *M. M* .... Yankton, Dak.
M. Pt. Div.: G. W. Cobb, *Supt* .... Mineral Pt., Wis.
Dubuque Div.: J. H. Jenkins, *Supt*..Dubuque, Ia.
E. Smedley, *M. M* .... Dubuque, Ia.
Chicago, Pekin & So.-Wn. R. R. 4-8½ g. 88 m. 8 lo. 455 c.
J. Murray, *Supt. & Pur. Agt* ...... Streator, Ill.
A. H. Cook, *Pur. Agt* .... Chicago, Ill.
A. R. Overton, *M. M* .... Joliet, Ill.
F. Shields, *M. C. B* .... Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 290 lo. 17,799 cars.
R. R. Cable, *V. P. & Gen. Man* .... Chicago, Ill.
A. Kimball, *Gen. Supt* .... Davenport, Ia.
F. A. Marsh, *Pur. Agt* .... Chicago, Ill.
T. B. Twombly, *Gen. M. M* .... Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B* ...... Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt* ..... Chicago, Ill.
R. Biester, *M. M* .... Chicago, Ill.
Sam'l Pullman, *M. C. B* .... Chicago, Ill.
Ia. Div.: H. F. Royce, *Supt* .... Des Moines, Ia.
J. G. Crockett, *M. M* .... Stuart, Ia.
Jas. E. Morrill, *M. M* .... Davenport, Ia.
Chas. M. Leonard, *M. C. B* ..... Davenport, Ia.
So.-Wn. Div.: G. F. Walker, *Supt* ..... Trenton, Ia.
R. A. Carscadin, *M. M* .... Trenton, Ia.
Chas. R. Best, *M. C. B* .... Trenton, Ia.
K. & Des. M. Div.: Jno. Given, *Supt*...Keokuk, Ia.
S. W. Wakefield, *M. M* .... Keokuk, Ia.
Henry Kummer, *M. C. B* .... Keokuk, Ia.
Chi., Saginaw & Can. R. R. 4-8½ g. 38 m. 4 lo. 61 c.
Jas. T. Hall, *Supt* .... St. Louis, Mich.
Chicago, St. Louis & New Orleans R. R.
4-8½ g. 571 m. 101 lo. 1,913 cars.
J. C. Clarke, *V. P. & G. Man*..New Orleans, La.
L. T. Brien, *Asst. Gen. Man* ..... Jackson, Tenn.
J. C. Febiger, Jr., *Pur. Agt*...New Orleans, La.
W. H. Purdy, *Supt. Mach*..McComb City, Miss.
Geo. W. Baxter, *M. C. B*...McComb City, Miss.
So. Div.: E. D. Anderson, *Acting Supt.* do.
E. D. Anderson, *M. M* .... McComb City, Miss.
No. Div.: J. G. Mann, *Supt* .... Jackson, Tenn.
J. M. Keith, *M. M* .... Jackson, Tenn.
J. F. White, *M. M* .... Water Valley, Miss.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 963 m. 31 lo. 619 cars.
C. F. Hatch, *Gen. Supt* .... St. Paul, Minn.
W. H. S. Wright, *Pur. Agt* .... St. Paul, Minn.
Matt. Ellis, *M. M* .... St. Paul, Minn.
W. B. Rice, *M. C. B* .... St. Paul, Minn.
Ea. & No. Div.: H. Spencer, *Supt*.St. Paul, Minn.
St. Paul Div.: J. F. Lincoln, *Supt*.St. Paul, Minn.
Sioux City Div.: T. P. Gere, *Supt*. Sioux City, Ia.
F. W. Heintselman, *Gen. For. Sh*. Sioux Cy, Ia.
Neb. Div.: G. V. Morford, *Supt* ...... Omaha, Neb.
Chicago, Texas & Mexican Central Ry. 52 miles.
J. T. Odell, *Gen. Supt* .... Dallas, Tex.
Chicago & Alton R. R. 4-8½ g. 840 m. 207 lo. 5,504 c.
J. C. McMullin, *Gen. Man* .... Chicago, Ill.
C. H. Chappell, *G. Supt. & A. G. Man.* do.
A. V. Hartwell, *Pur. Agt* .... Chicago, Ill.
Wm. Wilson, *Supt. of Mach*...Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept.* do.
Chi. Div.: A. M. Richards, *Supt*..Bloomington, Ill.
St. Louis Div.: T. M. Bates, *Supt*. Roodhouse, Ill.
Kan. Cy. Div.: O. Vaughan, *Supt* ...... Slater, Mo.
Wm. McPhail, *M. M* .... Slater, Mo.
Chicago & Block Coal Ry. 4-9 g. 15 m.
A. F. Beach, *Gen. Man* .... Veedersburg, Ind.
Chi. & East'n Ill. 4-8½ g. 248 m. 56 lo. 3,000 cars.
O. S. Lyford, *Gen. Supt. & Pur. Agt*.Chicago, Ill.
P. W. Drew, *M. Trans* .... Chicago, Ill.
Allen Cook, *M. M* .... Danville, Ill.
Jas. T. Kerney, *M. C. B* .... Danville, Ill.
Chicago & Grand Trunk Ry. (*See Grand Trunk.*)
Chicago & Indianapolis Air Line, 3 g. 67 m.
T. H. Hiner, *Manager* .... Delphi, Ind.
Chicago & Iowa R. R. 4-8½ g. 104 m. 15 lo. 237 cars.
W. H. Holcomb, *Rec* .... Rochelle, Ill.
S. H. S. Bryan, *M. M* .... Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 2,988 m. 476 lo. 16,673 cars.
Marvin Hughitt, *2d V. Pres. & G. M.* Chicago, Ill.
J. D. Layng, *Gen. Supt* .... Chicago, Ill.
W. G. Brownson, *Asst. Supt* .... Boone, Ia.
R. W. Hamer, *Pur. Agt* .... Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.*; and
J. M. Boon, *A. Supt. M. P. & M.* .Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Chas. D. Gorham, *Supt* .... Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt* .... Chicago, Ill.
Pen'r Div.: W. B. Linsley, *Supt*.... Escanaba, Mich.
Geo. H. White, *M. M* .... Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt*..Baraboo, Wis.
Win. & St. P. Div.: S. Sanborn, *Supt*.Winona, Minn.
W. A. Scott, *M. M* .... Winona, Minn.
Dak. Cen. Ry.: T. J. Nicholl, *Supt* .... Huron, Dak.
Mil. & Mad. Ry.: J. B. Trull, *Supt* ...... Galena, Ill.
Ia. Div.: J. M. Whitman, *Supt* .... Clinton, Ia.
J. O. Chapman, *M. M* .... Clinton, Ia.
H. L. Preston, *M. C. B* .... Clinton, Ia.
No. Ia. Div.: H. G. Burt, *Supt* .... Eagle Grove, Ia.
Chicago & West Michigan;
Grand Rapids, Newaygo, & Lake Shore; and
Grand Haven R. Rs. 4-8½ g. 362 m. 38 lo. 1,217 c.
Geo. C. Kimball, *V. P. & G. Man*. Muskegon, Mich.
A. M. Nichols, *Asst. Gen. Supt* Gr. Rapids, Mich.
H. Park, *Pur. Agt* .... Grand Rapids, Mich.
C. & W. M. Rd: C. M. Lawler, *Supt* St. Joseph, Mich.
Russell Booth, *M. M* .... Muskegon, Mich.
Gr. Hav. Rd.: F. H. May, *Manager*.Allegan, Mich.
Russell Booth, *M. M* .... Muskegon, Mich.
Gr. Rap. Rd.: A. M. Nichols, *Supt*.Gr. Rapids, Mich.
C. J. Howard, *M. M* ..... Grand Rapids, Mich.
Cincinnati, Columbus & Hocking Val. Ry. 3 g. 31 m.
J. E. Gimperling, *Gen. Man* .... Cincinnati, O.
Geo. F. Robinson, *Supt* .... Washington, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 2 lo. 39 c.
A. T. Roever, *Gen. Man* .... Cincinnati, O.
J. C. Homer, *M. M* .... Cincinnati, O.
Cincinnati, Green Riv. & Nashville R. R.
Geo. B. Harper, *Supt* ..... King's Mountain, Ky.
Cincinnati, Hamilton & Dayton R. R. (*See Ohio Ry.*)
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 345 m. 60 lo. 1,930 cars.
J. W. Sherwood, *Supt* .... Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt* .... Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B.* Cincinn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 841 m. 96 lo. 2,687 cars.
John Scott, *V. Pres. & Gen. Man*..Cincinnati, O.
James Meehan, *Gen. M. M* .... Ludlow, Ky.
Cin. So. Div.: Cecil Fleming, *Gen. Supt*..Cin., O.
Julius Uihlein, *Pur. Agt* .... Cincinnati, O.
Frank Allingham, *M. M* .... Cincinnati, O.
Ala. Gr. S'n Div.: C. B. Wallace, *Gen. Supt.*. and
R. W. Healey, *Pur. Agt* .... Chattanooga, Tenn.
A. Thomson, *M. M* .... Chattanooga, Tenn.
Fred Morgan, *M. C. B* ..... Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, *G. S.* Vicksburg, Miss.
James B. Browne, *M. M* .... Vicksburg, Miss.
V. S. & P. Div.: F. Y. Dabney, *Supt*..Monroe, La.
W. Bell Smith, *M. M. & C. B* ...... Monroe, La.
Cincinnati Northern Ry. 3 g. 30 m. 4 lo. 60 c.
C. W. Bradley, *G. Man. & Pur. Agt*.Cincinnati, O.
T. J. Hamer, *M. M. & C. B* .... Cincinnati, O.
Cincinnati South-Eastern Ry. 3 g. 17 m.
John V. Patton, *Supt* .... Flemingsburg, Ky.
Cincinnati Southern Ry (*See Cin., N. O. & Tex. Pac.*)
Cincinnati, Van Wert & Mich. R. R. 4-8½ g. 22 m.
R. J. Cavett, *Supt* .... Van Wert, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 110 m. 8 lo. 139 c.
Norman Beckley, *Gen. Man. & P. A.* Elkhart, Ind.
O. W. Lamport, *Supt* .... Wabash, Ind.
S. B. Tinker, *M. M. & M. C. B*....Wabash, Ind.
Cincinnati & Eastern Ry. 3 g. 62 m. 4 lo. 66 cars.
G. H. Wilber, *Gen. Supt* .... Cincinnati, O.
Clarksburg, Weston & Glenville R. R. 3 g. 26 m.
E. M. Vandervoort, *Gen. Agt*...Weston, W. Va.
Cleve., Col., Cin. & Indian'pl's Ry. (*See Ohio Ry.*)
Cleve., Akron & Col. R. R. 4-9 g. 144 m. 14 lo. 638 c.
N. Monsarrat, *Gen. Supt* .... Akron, O.
J. W. Holloway, *M. M. & C. B* .... Akron, O.
Cleve., Painesv'le & Ash. 4-8½ g. 11 m. 3 lo. 22 cars.
Wm. E. Lewis, *Gen. Man* .... Cleveland, O.
Cleveland & PittsburghR. R. (*See Penna. Co.*)
Cleveland, Tuscarawas Valley & Wheeling Ry.
4-8½ g. 158 m. 23 lo. 1,522 cars.
Oscar Townsend, *Gen. Man* .... Cleveland, O.
Wm. Thornburg, *Supt* .... Cleveland, O.
Thos. Ransom, *M. M* .... Lorain, O.
Cleve. & Marietta R. R. 4-8½ g. 99 m. 9 lo. 157 cars.
S. C. Baldwin, *Gen. Man* .... Marietta, O.
R. B. Hoover, *Pur. Agt* .... Marietta, O.
Thos. Robertson, *M. M* .... Marietta, O.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 207 cars.
Jas. R. Barber, *Gen. Supt* .... Coburg, Ont.
Columbia & Greenville R. R. (*See Rich. & Dan.*)
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 319 m. 76 lo. 6,000 cars.
Orland Smith, *Gen Man* .... Columbus, O.
G. R. Carr, *Gen. Supt. & Pur. Agt*.Columbus, O.
J. G. Hutchins, *M. M* .... Columbus, O.
J. M. Rockafield, *M. C. B* .... Columbus, O.
Tol. Div.: M. T. Seymour, *Supt* .... Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt*.Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt* .... Logan, O.
Columbus & Maysville Ry. 3 g. 19 m.
G. H. Wilber, *Supt* .... Batavia, O.
Columbus & Rome R. R. 3 g. 32 m. 2 lo. 25 cars.
M. E. Gray, *Supt* .... Columbus, O.
Columbus & Western Ry. 5 g. 89 m. 2 lo. 19 cars.
E. A. Llewellen, *Gen. Man* .... Columbus, Ga.
R. A. Bridges, *M. M* .... Opelika, Ala.
Concord & Claremont R. R. (*See Northern of N. H.*)
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 25 lo. 456 c.
J. Mulligan, *Supt. & Pur. Agt*.Springfield, Mass.
W. H. Stearns, *M. M* .... Springfield, Mass.
Robert Hitchcock, *M. C. B*...Springfield, Mass.
Connotton Valley R. R. 3 g. 109 m. 10 lo. 531 cars.
C. G. Patterson, *Gen Man* .... Canton, O.
W. N. Moffet, *Supt* .... Canton, O.
A. B. Proal, *Pur. Agt* .... Canton, O.
E. W. Poorman, *M. M* .... Canton, O.
Cooperstown & Susq. Val. 4-8½ g. 16 m. 2 lo. 13 cars.
Andrew Shaw, *Pres* .... Cooperstown, N. Y.
Corning, Cowanasque & An. Ry. (*See Syr., G. & C.*)
Cornwall R. R., 4-8½ g. 9 m. 5 lo. 166 cars.
Frank Donahue, *Gen. Supt* .... Lebanon, Pa.
Cotton Plant R. R. 3-6 g. 11 m.
Wm. Black, *Pres. & Gen. Man*...Brinkley, Ark.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 484 cars.
James Ross, *Gen. Supt* .... Toronto, Ont.
John Macnab, *Pur. Agt* .... Toronto, Can.
H. G. Taylor, *Mech. Supt* .... Toronto, Can.
Crown Point Iron Co. R. R. 3 g. 13 m.
J. M. Davies, *Supt* .... Crown Point, N. Y.
Cumberland & Maurice Riv. R. R. 4-8½ g. 22 m.
L. H. Dowdney, *Supt* .... Port Norris, N. J.
Cumberland & Pennsylvania R. R. 4-8½ g. 55 m.
P. L. Burwell, *Gen Supt & P. A.* Cumberland, Md.
N. W. Howson, *Mast. of Mach*.Mt. Savage, Md.
Nathan Binix, *M. C. B* .... Mt. Savage, Md.
Cumberland Valley R. R. 4-9 g. 125 m. 21 lo. 280 cars.
J. F. Boyd, *Supt* .... Chambersburg, Pa.
O. N. Lull, *Ch. En. & Pur. Agt*.Chambersb'g, Pa.
A. S. Hull, *M. M* .... Chambersburg, Pa.
G. W. Nitterhouse, *M. C. B.* Chambersburg, Pa.

CLIFF, RIGHTER & CO.,

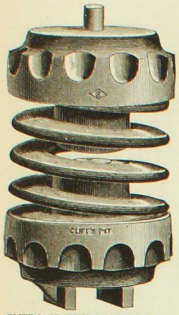
MANUFACTURERS OF

Railway Car Springs,

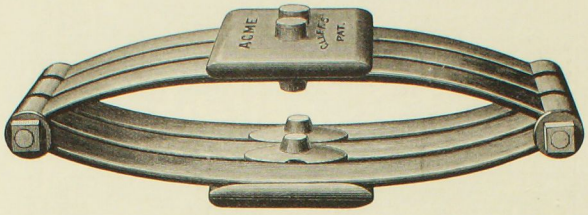
CLIFF BUFFER.
5½ by 8. 2¼ in. hole.
Capacity, 16,500 lbs.



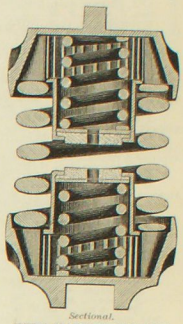
Sectional.
CLIFF BUFFER.
5½ x 8. 2¼ in. hole.
Capacity, 16,500 lbs.



CLIFF'S GRADUATED EQUALIZER.
7¼ in. diam., 11¼ in. high.
Capacity graduated from 7,000 to 10,000 lbs.



ACME TRIPLET FREIGHT ELLIPTIC.
CLIFF'S PATENT, MARCH 29, 1881.
22 in. long. 6¼ in. bearing to bearing.
Capacity, 28,500 lbs.



Sectional.
CLIFF'S GRADUATED EQUALIZER.
7¼ in. diam., 11¼ in. high.
Capacity graduated from 7,000 to 10,000 lbs.

No. 5 DEY STREET, NEW YORK.

IN THE PATENT FIGHT

BETWEEN

D. A. HOPKINS, of 113 Liberty Street, N. Y.,

PATENTEE AND MANUFACTURER OF

SELF-FITTING JOURNAL BEARINGS,

AND

T. V. LE ROY,

A SECOND DECISION WAS RENDERED JUNE 7, 1881,

IN FAVOR OF HOPKINS.

The closing paragraphs of said decision read as follows:

"As the proofs stand, therefore, Hopkins was the first to conceive, the first to disclose to others, the first to embody models, the first to reduce to practice, and the first to apply for a patent. Le Roy was first to obtain a patent, but under circumstances which do not give him the prima facie case which a patent usually implies."

"We must find priority of invention to be with D. A. Hopkins, and affirm the examiner's decision."

H. H. BATES,
R. L. B. CLARKE.
R. G. DYRENFORTH,
Examiners-in-Chief.

WILSON, WALKER & CO.,

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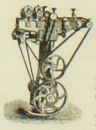
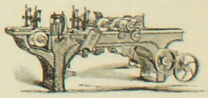
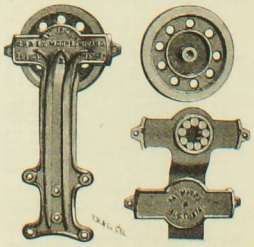


LEE'S PATENT
Molding Machines
Five different styles and sizes. These are especially adapted to all classes of car work.



HENRY A. LEE, Manuf'r, 164 Union St., Worcester, Mass.



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OF ALL SIZES, FOR

WAREHOUSE DOORS,
FREIGHT-HOUSE DOORS,
BAGGAGE-CAR DOORS,
FREIGHT-CAR DOORS,
STREET-CAR DOORS, ETC.

Send for Price List, Illustrated.

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S. H. & E. Y. MOORE,
163 & 165 LAKE STREET, CHICAGO.

D

Danbury & Norwalk R. R. 4-8½ g. 33 m. 6 lo. 100 c.
L. W. Sandiforth, G. Supt. & P. A. S. Norwalk, Ct.
N. M. George, M. M. & C. B. ... Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. W. Goodrich, Ch. Eng. ... Leakesville, N. C.
Danville, Olney & O. Riv. R. R. 3 g. 110 m. 4 lo. 83 c.
C. Howard, G. Man. & Pur. Agt. Boston, Mass.
J. M. Graham, Supt ... Kansas, Ill.
Louis Parisoe, M. M. & C. B. ... Kansas, Ill.
Dayton & Union R. R. (See Ohio Ry.)
Delaware, Lackawanna & Western R. R.
4-8½ g. 703 m. 348 lo. 26,187 cars.
Wm. F. Halstead, Gen. Supt. ... Scranton, Pa.
G. W. B. Cushing, Pur. Agt. ... New York, N. Y.
Walter Dawson, Mast. of Mach. ... Scranton, Pa.
Robt. McKenna, Mast. Car Rep. ... Scranton, Pa.
Bloomsb'g Div.: C. Graham, M. M. Kingston, Pa.
Utica Div.: A. C. Salisbury, Supt ... Utica, N. Y.
Thos. Thatcher, M. M. ... Utica, N. Y.
Morris & Essex Div. and Sussex R. R.:
A. Reasoner, Supt ... Hoboken, N. J.
W. H. Lewis, M. M. ... Kingsland, N. J.
J. W. Baker, M. C. B. ... Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, Supt ... Oswego, N. Y.
Jas. Buchanan, M. M. ... Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, Gen. Supt ... Syracuse, N. Y.
Jas. Buchanan, M. M. ... Syracuse, N. Y.
Delaware River R. R. 4-9 g. 20 m.
E. H. Green, Supt ... Woodbury, N. J.
Delaware Western R. R. 4-8½ g. 20 m. 4 lo. 30 cars.
David Connell, Supt ... Wilmington, Del.
Delaware & Chesapeake R. R. 4-8½ g. 54 m. 3 lo. 16 c.
O. S. Sanford, Supt ... Oxford, Md.
Joseph A. Baynard, M. M. ... Oxford, Md.
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 596 m. 151 lo. 9,248 cars.
C. F. Young, Gen. Man ... Honesdale, Pa.
C. F. Young, Pur. Agt ... Albany, N. Y.
R. C. Blackall, Supt. of Mach. ... Albany, N. Y.
Susq. Div.: C. D. Hammond, Supt. Albany, N. Y.
C. A. Jones, M. M. ... Oneonta, N. Y.
J. R. Skinner, M. C. B. ... Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, Supt. .. Troy, N. Y.
J. L. Corey, M. M. ... Green Island, N. Y.
Chr. Körner, M. C. B. ... Green Island, N. Y.
Pa. Div.: R. Manville, Supt. & Pur. Agt.; and
S. H. Dotterer, M. M. ... Carbondale, Pa.
T. Orchard, M. C. B. ... Carbondale, Pa.
Denver & Rio Grande Ry. 3 g. 1,062 m. 101 lo. 2,798 c.
D. C. Dodge, Gen. Man ... Denver, Col.
Geo. W. Ristine, Asst. Gen. Man. .. Denver, Col.
A. B. Garner, Pur. Agt. .. Colorado Springs, Col.
G. W. Cushing, Gen. Supt ... Denver, Col.
N. W. Sample, M. M. ... Denver, Col.
1st Div.: M. C. Kimberly, Supt ... S. Pueblo, Col.
2d Div.: W. H. Bancroft, Supt ... Alamosa, Col.
Gun'n Div.: J. A. Myers, Supt ... Salida, Col.
B. & E. Riv. Div.: C. Lydon, Supt. .. Leadville, Col.
San J. Div.: R. M. Ridgeway, Supt. .. Antonito, Col.
Des Moines & Ft. Dodge. 4-8½ g. 87 m. 9 lo. 153 c.
C. N. Gilmore, Supt ... Des Moines, Ia.
John McGrayel, M. M. ... Grand Junction, Ia.
E. A. Avery, M. C. B. ... Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 36 lo. 478 c.
John Barton, Asst. Man ... Detroit, Mich.
John S. Lorimer, Storekeeper ... Detroit, Mich.
W. J. Morgan, Supt ... Detroit, Mich.
F. Parker, M. M. ... Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 34 lo. 1027 c.
John B. Mulliken, Gen. Man ... Detroit, Mich.
Allan Bourn, Pur. Agt ... Detroit, Mich.
Thos. M. Fish, Gen. Supt ... Ionia, Mich.
G. C. Watrous, M. M. & C. B. ... Ionia, Mich.
Det., Mack. & Marq. R. R. 4-8½ g. 151 m. 8 lo. 227 c.
Thos. McKeown, Gen. Supt. .. Marquette, Mich.
E. W. Allen, Pur. Agt ... Marquette, Mich.
John Wilson, M. M. ... Marquette, Mich.
Dorchester & Delaware R. R. 4-8½ g. 33 m.
Thos. E. Wright, Supt ... Cambridge, Md.
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, Supt ... Waverly, Ia.
W. S. Couch, Pur. Agt ... Dubuque, Ia.
Duck River Valley R. R. 3 g. 34 m.
Geo. Childress, Supt ... Columbia, Tenn.
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, Gen. Supt ... Dunkirk, N. Y.
R. C. Moore, Pur. Agt ... New York, N. Y.
J. C. Haggett, M. M. & C. B. ... Dunkirk, N. Y.

E

East Alabama Ry. 5 g. 22 m. 3 lo. 12 cars.
W. W. Barnes, Supt ... Opelika, Ala.
East Broad Top R. R. 3 g. 30 m. 6 lo. 191 cars.
A. W. Sims, Supt ... Orbisonia, Pa.
G. A. Haggerty, M. M. ... Orbisonia, Pa.
E. St. Louis & Carondelet Ry. 4-9 g. 12 m. 1 lo. 22 c.
Joseph Hill, Gen. Supt ... East St. Louis, Mo.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,185 m. 102 lo. 1,597 cars.
J. F. O'Brien, Gen. Supt ... Knoxville, Tenn.
Main Stem: Ohio; and No. Car. Divs.:
F. K. Huger, Supt ... Knoxville, Tenn.
B. J. Sitton, M. M. ... Knoxville, Tenn.
Jos. Armbruster, M. C. B. ... Knoxville, Tenn.
Selma and Alabama Central Divs.:
John M. Bridges, Supt ... Selma, Ala.
Simon Gay, M. M. ... Selma, Ala.
W. W. Pierce, M. C. B. ... Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., Supt ... Memphis, Tenn.
H. N. Burford, M. M. ... Memphis, Tenn.
J. J. Casey, M. C. B. ... Memphis, Tenn.
Macon & Brunswick Div.:
J. M. Edwards, Supt ... Macon, Ga.
C. E. Armstrong, Pur. Agt ... Macon, Ga.
R. Wagnon, M. M. ... Macon, Ga.
East Tenn. & W'n No. Car. R. R. 3 g. 15 m. 2 lo. 36 c.
Thomas E. Matson, Supt. .. Elizabethton, Tenn.
Eastern R. R. 4-8½ g. 283 m. 99 lo. 2,268 cars.
D. W. Sanborn, Mast. of Trans. .. Boston, Mass.
Geo. J. Fisher, Pur. Agt ... Boston, Mass.
Amos Pillsbury, S. M. P. & M. .. E. Boston, Mass.
J. D. Billings, M. C. B. ... Salem, Mass.
Con'y Div.: J. W. Sanborn, Supt., Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 123 c.
H. W. Bates, V. P. & Manager ... Riverton, Ky.
Geo. Gibbs, Pur. Agt ... Riverton, Ky.
D. S. Weaver, M. M. ... Riverton, Ky.
Eastern Ohio R. R. 4-8½ g. 8 m. 1 lo. 2 cars.
W. H. Stevens, Gen. Supt ... Cumberland, O.
Eastern Shore R. R. 4-8½ g. 38 m. 2 lo.
W. Thompson, Supt ... Princess Anne, Md.
Elberton Air-Line R. R. 3 g. 50 m. 2 lo. 25 cars.
G. J. Foreacre, Gen. Man. & P. A. Atlanta, Ga.
Elgin Ry. 14 miles.
C. E. Hallett, Gen. Man ... Sussex, N. B.
Elizabeth City & Norfolk R. R. 4-8½ g. 79 m. 5 lo. 96 c.
M. K. King, Gen. Man. & Pur. Agt. Norfolk, Va.
J. S. Whitworth, M. M. & C. B. ... Norfolk, Va.
Erie & Pittsburgh R. R. (See Penna. Co.)
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 124 cars.
P. Everts, Gen. Supt & Pur. Agt. .. Eureka, Nev.
J. P. Berg, M. M. ... Palisade, Nev.
A. S. Longley, M. C. B. ... Palisade, Nev.
Europ. & No. Amer. Ry. 4-8½ g. 114 m. 15 lo. 557 c.
F. W. Cram, Supt. & Pur. Agt ... Bangor, Me.
A. O. Bailey, M. M. & C. B. Mattawamkeag, Me.
Evansville, Paducah & Cairo Line. 200 miles.
G. J. Grammer, Supt ... Evansville, Ind.
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, Supt ... Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 114 m. 26 lo. 900 c.
C. J. Hepburn, Gen. Supt ... Evansville, Ind.
John Torrence, Gen. For ... Evansville, Ind.

F

Fitchburg R. R. 4-8½ g. 189 m. 100 lo. 3,315 cars.
John Adams, Gen. Supt ... Boston, Mass.
E. K. Turner, Asst. Supt ... Fitchburg, Mass.
F. S. Pratt, Pur. Agt ... Boston, Mass.
W. A. Foster, Acting Supt. M. P. & M.; and
J. W. Marden, M. C. B. ... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 318 m. 52 lo. 1,556 cars.
H. C. Potter, Gen. Man ... E. Saginaw, Mich.
D. Edwards, Asst. Gen. Man. .. E. Saginaw, Mich.
G. G. Cook, Pur. Agt ... E. Saginaw, Mich.
Sanford Keeler, Gen. Supt ... E. Saginaw, Mich.
W. F. Potter, Supt. (E. Div.) .. E. Saginaw, Mich.
M. V. Meredith, Supt. (W. Div.) E. Saginaw, Mich.
T. J. Hatswell, M. M. ... E. Saginaw, Mich.
R. McPherson, M. C. B. ... E. Saginaw, Mich.
Florida Central R. R. 5 g. 59 m.
Wm. M. Davidson, Supt. & P. A. Jacksonville, Fla.
Jas. S. McElroy, M. M. & C. B. Jacksonville, Fla.
Florida Southern Ry. 3 g. 50 miles.
N. R. Gruelle, Gen. Supt ... Palatka, Fla.
F. A. Garrison, Pur. Agt ... Palatka, Fla.
B. L. Baldwin, M. M. & C. B. ... Palatka, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 18 c.
Lawton Caten, Supt ... Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, Supt. & P. A. Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. 4-8½ g.
G. R. Pearson, Supt ... Fort Dodge, Ia.
Ft. Madison & No.-West'n Ry. 3 g. 12 m. 1 lo. 21 c.
S. B. Kenrick, Supt. & Pur. Agt. Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 108 m. 9 lo. 249 c.
W. W. Worthington, Gen. Supt. Ft. Wayne, Ind.
Ft. Wayne & Jackson. 4-8½ g. 100 m. 10 lo. 353 c.
Gen. Supt. & P. A. ... Jackson, Mich.
C. W. Hollister, M. M. & C. B. .. Jackson, Mich.
Fredericton Ry. 4-8½ g. 22 m. 2 lo. 22 cars.
F. B. Edgecomb, Supt ... Fredericton, N. B.
Freehold & New York Ry. 4-9 g. 15 m. 3 lo. 40 c.
J. E. Ralph, Supt., P. A. & M. M. Keyport, N. J.
Chas. H. Snedeker, M. C. B. ... Freehold, N. J.
Fulton County N. G. Ry. 3 g. 29 miles.
S. H. Mallory, Gen. Manager ... Lewiston, Ill.

G

Galveston, Harrisburg & San Antonio Ry.
4-8½ g. 382 m. 37 lo. 870 cars.
Jas. Converse, Gen. Supt ... Houston, Tex.
Chas. Babbidge, Pur. Agt ... Boston, Mass.
D. T. Davis, Supt. M. P. & M. .. Harrisburg, Tex.
James Alexander, M. C. B. ... Harrisburg, Tex.
El Paso Div. (See Cen. Pac.) 4-8½ g. 144 miles.
Galveston, Houston & Henderson R. R.
4-8½ g. 50 m. 17 lo. 212 cars.
W. H. Harding, Gen. Man ... Galveston, Tex.
Allen McCoy, Supt ... Galveston, Tex.
J. G. Conlon, M. M. ... Galveston, Tex.
Geneva, Ithaca & Sayre R. R. (See Lehigh Val.)
Georgia R. R. 5 g. 307 m. 42 lo. 938 cars.
John W. Green, Gen. Man ... Augusta, Ga.
John S. Cook, M. M. ... Augusta, Ga.
T. M. Preval, M. C. B. ... Augusta, Ga.
Georgia Pacific Ry. (Miss. Div.). 3 g. 43 m. 2 lo. 44 c.
C. M. Bolton, Supt ... Greenville, Miss.
Grand Haven R. R. (See Chic. & W. Mich.)
Grand Junction R'y. (See Midland of Can.)
G'd Rap., Newaygo & L. S. R. R. (See Chic. & W. M.)
Grand Rapids & Indiana. 4-8½ g. 456 m. 46 lo. 1,566 c.
W. O. Hughart, Pres ... Grand Rapids, Mich.
W. R. Shelby, Pur. Agt ... Grand Rapids, Mich.
S. D. Bradley, M. M. ... Fort Wayne, Ind.
No'n Div.: J. M. Metheany, Supt. G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, Supt. Fort Wayne, Ind.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, Supt. & P. A. Gr. Tower, Ill.
Hugh Smith, M. M. & C. B. ... Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 1,267 m. 434 lo. 9,403 c.
Joseph Hickson, Gen. Man. ... Montreal, Can.
Wm. Wainright, Asst. Gen. Man. Montreal, Can.
Gr. Tr. Divs.: W. J. Spicer, Supt. Montreal, Can.
Jno. Taylor, Gen. Storekeeper. Montreal, Can.
Herbert Wallis, Mech. Supt ... Montreal, Can.
Wm. McWood, M. C. B. ... Montreal, Can.
F. R. F. Brown, Asst. M. S. ... Montreal, Can.
J. Davis Barnett, Asst. M. S. .. Stratford, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 330 m. 56 lo. 1,191 c.
S. R. Callaway, Gen. Man ... Chicago, Ill.
N. Wall, Pur. Agt ... Fort Gratiot, Mich.
H. Roberts, Mech. Supt ... Port Huron, Mich.
Great Western Ry. 4-8½ g. 823 m. 216 lo. 5,039 c.
F. Broughton, Gen. Man ... Hamilton, Ont.
Chas. Stiff, Supt ... Hamilton, Ont.
G. R. Nash, Storekeeper ... London, Ont.
C. K. Domville, Loco. Supt ... Hamilton, Ont.
C. F. Hanson, M. M. ... London, Ont.
Henry Childs, Car Supt ... London, Ont.
Green Bay, Winona & St. Paul R. R.
4-8½ g. 218 m. lo. 599 cars.
Timothy Case, V. P., Gen. Man. Green Bay, Wis.
James S. Mott, Pur. Agt ... Green Bay, Wis.
Edw. Osborne, M. M. ... Ft. Howard, Wis.
Greenwich & Johnsonville Ry. 4-8½ g. 15 miles.
J. H. Thompson, Supt ... Greenwich, N. Y.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 303 m. 15 lo. 430 c.
John Sealy, Gen. Man ... Galveston, Texas.
F. P. Killeen, Asst. Gen. Man. & Pur. Agt. do.
G. B. Nichols, M. M. ... Galveston, Texas.
W. H. Martin, M. C. B. ... Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 70 c.
M. D. Monserrate, Pr. & Supt ... Cuero, Texas.
James Mooney, M. M. ... Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 79 m. 5 lo. 237 c.
H. Abbott, Manager ... New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 78 lo. 1,860 c.
John B. Carson, Gen. Man ... Hannibal, Mo.
W. R. Woodard, Supt ... Hannibal, Mo.
T. L. Dunn, Ch. Eng. & Pur. Agt. Hannibal, Mo.
Jas. Long, Supt. M. P. & Car Dep. Hannibal, Mo.
Hanover Branch Ry. 4-8½ g. 8 m. 2 lo. 18 cars.
E. Y. Perry, Pres ... So. Hanover, Mass.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 9 lo. 106 cars.
H. A. Young, Gen. Supt ... Hanover, Pa.
John J. Bingley, M. M. ... Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 27 m. 2 lo. 7 c.
R. H. Middleton, Supt ... Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 45 m. 7 lo. 196 c.
Samuel Babcock, Pr. & Supt ... Hartford, Ct.
Hartford & Conn. W'n R. R. 4-8½ g. 69 m. 10 lo. 235 c.
John F. Jones, Supt ... Hartford, Ct.
J. C. Barton, M. M. ... Hartford, Ct.
Hartwell R. R. 3 g. 10 m. 1 lo. 3 cars.
E. B. Benson, Supt ... Hartwell, Ga.
Housatonic R. R. 4-8½ g. 126 m. 22 lo. 495 cars.
L. B. Stillson, Supt ... Bridgeport, Ct.
D. S. Draper, Pur. Agt ... Bridgeport, Ct.
N. Slingland, M. M. ... Falls Village, Ct.
J. J. Ferris, M. C. B. ... Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge 50 miles.
S. L. Werden, V. P. & Gen. Man. Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 88 m. 6 lo. 224 c.
E. L. Bremond, Gen. Man ... Houston, Tex.
Paul Bremond, Pur. Agt ... Houston, Tex.
A. Riggs, M. M. ... Houston, Tex.
Houston & Tex. Cen. Ry. 4-8½ g. 799 m. 78 lo. 2,350 c.
G. Jordan, V. Pr. & Gen. Man. ... Houston, Tex.
A. H. Swanson, Gen. Supt ... Houston, Tex.
E. S. Larcher, Pur. Agt ... New York, N. Y.
L. C. Noble, Gen. M. M. ... Houston, Tex.
James McGee, M. C. B. ... Houston, Tex.
So. & Wn. Divs.: M. G. Howe, Supt. Houston, Tex.
No. & Mi. Divs.: G. A. Quinlan, Supt., and
C. H. Burns, Asst. M. M. ... Corsicana, Tex.
No.-Wn. Div.: Donald Allen, Supt ... Waco, Tex.
Humeston & Shenandoah R. R. 30 miles.
F. O. Wyatt, Gen. Man ... Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, Gen. Supt ... Huntingdon, Pa.
Samuel B. Knight, Pur. Agt. .. Philadelphia, Pa.
William Barkla, M. M. ... Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,320 m. 224 lo. 5,952 c.
E. T. Jeffery, Gen. Supt ... Chicago, Ill.
C. A. Beck, Asst. Gen. Supt ... Chicago, Ill.
O. Ott, Pur. Agt ... Chicago, Ill.
S. J. Hayes, Supt. of Mach ... Chicago, Ill.
W. B. Snow, M. M. Car Works ... Chicago, Ill.
Chic. Div.: T. J. Hudson, Supt ... Cairo, Ill.
Henry Schlacks, M. M. ... Chicago, Ill.
Mid. Div.: H. L. Frisbie, Supt ... Pontiac, Ill.
Spring. Div.: W. Wilkinson, Supt. Springfield, Ill.
W. B. McKenna, M. M. ... Clinton, Ill.
No'n Div.: J. C. Jacobs, Supt ... Amboy, Ill.
J. B. Edams, M. M. ... Amboy, Ill.
Ia. Div.: D. W. Parker, Supt ... Dubuque, Ia.
Thos. W. Place, M. M. ... Waterloo, Ia.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
L. Genis, Rec. & Gen. Man. .. Terre Haute, Ind.
E. D. Frost, Gen. Supt ... Terre Haute, Ind.
J. G. Clifford, M. M. ... Terre Haute, Ind.
Illinois & St. Louis R. R. 4-8½ g. 18 m. 5 lo. 402 c.
C. H. Sharman, Gen. Supt. & P. A. Belleville, Ill.
E. Hockett, M. M. ... Belleville, Ill.
Charles Rotha, M. C. B. ... E. St. Louis, Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 673 m. 97 lo. 3,451 cars.
C. E. Henderson, Gen. Man. Indianapolis, Ind.
H. C. Norton, Pur. Agt ... Indianapolis, Ind.
B. Warren, M. M. & C. B. ... Urbana, Ill.
Peoria Div.: I. H. Wilson, Supt. Indianapolis, Ind.
St. Louis Div.: F. L. Peck, Act. Supt. Indnpls, Ind.
P. Leeds, Supt. Mo. Po. ... Indianapolis, Ind.
Ohio Div.: D. W. C. Brown, Supt ... Sandusky, O.
Jos. S. Porter, M. M. ... Sandusky, O.
Ohio So'n Rd.: Ford Woods, Supt. .. Springfield, O.
G. A. Barnes, Pur. Agt ... Springfield, O.
J. L. Brown, M. M. ... Springfield, O.
Indiana, Illinois & Iowa R. R. 42 miles.
F. M. Drake, Gen. Man ... Dwight, Ill.
Indianapolis & St. Louis R. R. (See Ohio Ry.)
Indianapolis & Vincennes R. R. (See Penna. Co.)
Intercolonial Ry. 4-8½ g. 846 m. 111 lo. 3,223 cars.
David Pottinger, Chief Supt ... Moncton, N. B.
T. V. Cooke, Gen. Storekeeper .. Moncton, N. B.
H. A. Whitney, Mech. Supt ... Moncton, N. B.
Ewd. Shaffer, M. C. B. ... Moncton, N. B.
Monc. Div.: James E. Price, Supt. Moncton, N. B.
Hal. & St. J. Div.: Jas. Coleman, Supt. .. Truro, N. B.
No'n Div.: M. Busby, Supt ... Campbellton, N. B.
Levis Div.: M. McDonald, Supt. Rivière du Loup, Q.
International Ry. 4-8½ g. 69 m. 2 lo. 12 cars.
International & Gt. N'n R. R. (See St. L., I. M. & S.)
D. E. McFee, Supt ... Sherbrooke, Que.
Iowa Eastern R. R. 3 g. 19 m. 1 lo. 32 cars.
H. H. Kerr, Supt ... Beulah, Ia.
Iron R. R. 4-10 g. 16 m. 5 lo. 187 cars.
Charles Campbell, Pr ... Ironton, O.
Perry Scott, M. M. ... Ironton, O.
Clem. Roetling, M. C. B. ... Ironton, O.
Iron Mountain & Helena R. R. 4-8½ g. 27 m. 2 lo. 11 c.
Wm. Bailey, Pres. & Gen. Man. .. Helena, Ark.
D. Stillinger, Supt ... Helena, Ark.
F. M. Green, Pur. Agt ... Helena, Ark.
Ithaca, Auburn & Western R. R. 4-8½ g. 38 m.
Fred T. Peet, Supt ... Auburn, N. Y.

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 68 c.
E. S. Greenleaf, Supt ... Jacksonville, Ill.
Ira Petrie, M. M. ... Jacksonville, Ill.
Jacksonv., Pensacola & Mob. 5 g. 175 m. 11 lo. 102 c.
J. P. Laird, Supt. & M. M. ... Tallahasse, Fla.
Jamesville & Washington. 4-8½ g. 22 m. 3 lo. 24 c.
A. Fisher, Manager ... Dymond City, N. C.
J. E. Lordley, M. M. & C. B. .. Dymond City, N. C.
Jeffersonv'l, Madison & Indpls. R. R. (See Pa. Co.)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, Manager ... Jersey City, N. J.
Junction & Breakwater; Breakwater & Frankford;
and Worcester R. Rs. 4-8½ g. 101 m. 6 l. 133 c.
J. & B. Rd.: Thos. Groome, Supt ... Lewes, Del.
J. A. Maguire, M. M. ... Lewes, Del.
B. & F. and W. Rds.: J. L. Mapes, St. Berlin, Md.

K

Kansas Central R. R. 3 g. 150 m.
W. A. Martin, Supt. & Pur. Agt.; and
Wm. McCall, M. M. ... Leavenworth, Kan.
W. S. Roach, M. C. B. ... Leavenworth, Kan.
Kansas City, Fort Scott & Gulf R. R.; and
Kansas City, Lawrence & Southern Kansas R. Rs.
4-8½ g. 729 m. 62 lo. 1,700 cars.
Geo. H. Nettleton, Gen. Man. .. Kansas City, Mo.
L. W. Towne, Gen. Supt ... Kansas City, Mo.
H. P. Jacques, Pur. Agt ... Kansas City, Mo.
J. L. Barnes, Supt ... Kansas City, Mo.
J. S. McCrum, M. M. ... Kansas City, Mo.
A. N. Montier, M. C. B. ... Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. &
Des Moines R. Rs. 4-8½ g. 368 m. 38 lo. 1,148 cars.
J. F. Barnard, Gen. Supt. & P. A. St. Joseph, Mo.
F. A. Chase, M. M. ... St. Joseph, Mo.
Thos. Aylesbury, M. C. B. ... St. Joseph, Mo.
Kendall & Eldred R. R. (See Olean, B. & W.)
Kent Co.; Sm. & Del. Bay Rds. 4-8½ g. 50 m. 2 c.
Fred Gerker, Gen. Man ... Chestertown, Md.
Kentucky Central R. R. 5 g. 148 m. 19 lo. 371 cars.
J. D. Ellison, Gen. Man ... Covington, Ky.
J. R. Ledyard, Supt ... Covington, Ky.
J. H. Setchel, M. M. & Asst. Supt. Covington, Ky.
J. L. Hackathorn, M. C. B. ... Covington, Ky.
Kinzua R. R. (See Olean, B. & W.)
Kingston & Pembroke Ry. 4-8½ g. 65 m. 4 lo. 76 c.
B. W. Folger, Supt ... Kingston, Can.
Wm. Harty, Pur. Agt ... Kingston, Can.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 95 cars.
C. A. Coombs, Supt ... Bath, Me.
Wm. A. Field, M. M. ... Bath, Me.
C. L. Turner, M. C. B. ... Bath, Me.
Knoxville & Augusta R. R. 4-6 g. 16 m. 2 lo. 34 cars.
J. M. Hood, Supt ... Marysville, Tenn.

L

Lake Erie & Western Ry. 4-8½ g. 362 m. 35 l. 1,526 c.
E. H. Waldron, Gen. Man ... La Fayette, Ind.
E. H. Andress, Pur. Agt ... La Fayette, Ind.
H. L. Cooper, Supt. of Equipment ... Lima, O.
Sandusky Div.: D. S. Hill, Supt ... Fremont, O.
Bloom. Div.: J. B. Clark, Supt ... La Fayette, Ind.
Lake George & Muskegon Riv. 4-8½ g. 21 m. 4 lo. 75 c.
W. S. Gerrish, Gen. Man ... Muskegon, Mich.
Lake Ontario So'n Ry. 4-8½ g. 34 m. 3 lo. 40 cars.
Jas. E. Briggs, Gen. Man ... Newark, N. Y.
Geo. Thompson, M. M. ... Sodus Point, N. Y.
Wm. Currier, M. C. B. ... Sodus Point, N. Y.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,243 m. 496 lo. 13,665 cars.
John Newell, Gen. Man ... Chicago, Ill.
P. P. Wright, Gen. Supt ... Cleveland, O.
A. C. Armstrong, Pur. Agt ... Cleveland, O.
James Sedgley, Gen. M. M. ... Cleveland, O.
John Kirby, Gen. M. C. B. ... Cleveland, O.
Buffalo Div.: C. B. Couch, Supt ... Cleveland, O.
J. S. Graham, M. M. ... Buffalo, N. Y.
A. C. Robson, M. C. B. ... Buffalo, N. Y.
Frank. Div.: G. H. McIntire, Supt. .. Stoneboro, Pa.
Erie Div.: C. B. Couch, Supt ... Cleveland, O.
L. O. Gassett, M. M. ... Cleveland, O.
J. Withycombe, M. C. B. ... Cleveland, O.
Toledo Div.: Thos. Flesher, Jr., Supt. Cleveland, O.
J. M. Sanborn, M. M. ... Norwalk, O.
W. O. Smith, M. C. B. ... Norwalk, O.
Mich. Div.: J. E. Curtis, Supt ... Toledo, O.
Det. Div.: T. J. Charlesworth, Supt. Detroit, Mich.
Lansing Div.: W. H. Caniff, Supt. .. Lansing, Mich.
Western Div.: J. H. Parsons, Supt ... Chicago, Ill.
G. W. Stevens, M. M. (M. S. Divs.). Elkhart, Ind.
Frank O. Bray, M. C. B. ... Adrian, Mich.
Laurel Fork & Sand Hill R. R. 4-8½ g. 6 m. 2 lo. 4 c.
D. C. Mudge, Supt ... Parkersburg, W. Va.
Lebanon Springs R. R. 4-8½ g.
W. C. Alstyne, Manager ... Albany, N. Y.
Lehigh Valley R. R. 4-8½ g. 545 m. 315 lo. 31,947 c.
Robt. H. Sayre, Gen. Supt ... Bethlehem, Pa.
H. S. Goodwin, Asst. Gen. Supt. Bethlehem, Pa.
L. Chamberlain, Pur. Agt ... Philadelphia, Pa.
John S. Lentz, M. C. B. ... Packerton, Pa.
N. J. Div.: John I. Kinsey, M. M. .. So. Easton, Pa.
Coal Rds.: J. I. Blakeslee, Supt. Mauch Chunk, Pa.
P. Hofecker, M. M. ... Weatherly, Pa.
John Campbell, M. M. ... Delano, Pa.
B. M. Div.: A. G. Brodhead, S. .. Mauch Chunk, Pa.
D. Clark, M. M. ... Hazleton, Pa.
Wy. Div.: A. Mitchell, S. & M. M. Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, Supt ... Sayre, Pa.
J. N. Weaver, M. M. ... Waverley, Pa.
Levis & Kennebec Ry. 4-8½ g. 45 m.
Robert Smith, Manager ... Levis, Quebec.
Ligonier Valley R. R. 3 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, Gen. Manager. East Liberty, Pa.
Little Rock, Miss. River & Texas Ry.
4-8½ g. 160 m. 12 lo. 160 cars.
J. A. Woodson, G. S. & P. A. Little Rock, Ark.
F. F. Hufsmith, M. M. & C. B. Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 168 m. 12 lo. 197 c.
T. Hartman, Gen. Supt ... Little Rock, Ark.
James Eblin, M. M. ... Argenta, Ark.
James Malone, M. C. B. ... Argenta, Ark.
Long Island R. R. 4-8½ g. 325 m. 74 lo. 623 cars.
I. D. Barton, Supt ... Long Island City, N. Y.
Benj. Norton, Pur. Agt. Long Island City, N. Y.
C. A. Thompson, M. M. & C. B. do.
Long View & Sabine Val. Ry. 3 g. 12 m. 1 lo. 10 cars.
B. Barner, Pr. & Gen. Supt ... Long View, Tex.
Louisiana Western R. R. (See Tex. & N. O.
Louisville, New Albany & Chicago Ry.
4-8½ g. 289 miles 33 lo. 2,800 cars.
John MacLeod, Gen. Supt ... Louisville, Ky.
Wm. M. Lewis, Pur. Agt ... Louisville, Ky.
Josiah Bettis, M. M. & C. B. .. New Albany, Ind.
Louis. N. Albany & St. L. Ry. 4-8½ g. 254 m. 2 lo. 20 c.
St. J. Boyle, V. Pr. & Gen. Man. Louisville, Ky.
R. G. Butler, Gen. Supt ... Louisville, Ky.
C. F. Martin, Pur. Agt ... Louisville, Ky.
F. M. Mast, M. M. ... Evansville, Ind.
Louisville & Nashville R. R.
5 g. 2,072 m. 316 lo. 6,131 cars.
Fred. de Funiak, Gen. Man ... Louisville, Ky.
G. C. Breed, A. Gen. Man. & Pur. Agt. do.
D. W. C. Rowland, Gen. Supt. Trans. do.
Reuben Wells, Supt. Mach ... Louisville, Ky.
Louisv. Divs.; and Louisv., Cin. & Lex. Ry. (Cin. Div.)
J. G. Metcalf, Supt ... Louisville, Ky.
A. Middleton, M. M. (Lo. Div.). Louisville, Ky.
J. W. Luttrell, M. M. (Cin. Div.). Louisville, Ky.
W. P. Pike, M. M. (2d & C. Div.). Bowling Green, Ky.
Nash. & D. Div.: J. Geddes, Supt. Nashville, Tenn.
W. H. Thomas, M. M. ... Nashville, Tenn.
S. & N. A. Div.: E. Marsh, Supt. Birmingham, Ala.
C. W. White, M. M. ... Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, Supt ... Montgomery, Ala.
J. N. Hall, M. M. (Mont. Shops). Montgomery, Ala.
N. O. Div.: J. T. Harrihan, Supt. New Orleans, La.
Wm. Adair, M. M. ... Mobile, Ala.
Memp. Div.: W. Colcamp, Supt. Memphis, Tenn.
J. V. Slusser, M. M. ... Memphis, Tenn.
St. L. Div.: J. Montgomery, Supt. Evansville, Ind.
Thos. Walsh, M. M. ... Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
E. O. Saltmarsh, Supt ... Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m.
J. H. Wilkins, Pr. & Supt ... Louisville, Ga.

M

Maine Central R. R. 4-8½ g. 355 m. 58 lo. 1,335 c.
Payson Tucker, Supt ... Portland, Me.
Ira K. Russell, For. Mach. Sh. .. Waterville, Me.
C. H. Kenison, For. Car Sh. ... Augusta, Me.
Manchester & Keene R. R. (See B. L. & C.)
B. F. George, Asst. Supt ... Keene, N. H.
Manhattan Ry. 4-8½ g. 32 m. 203 lo. 596 pass. c.
Frank K. Hain, Gen. Man ... New York, N. Y.
James Tobin, Pur. Agt ... New York, N. Y.
C. L. Green, Supt ... New York, N. Y.
T. W. Peeples, M. M. ... New York, N. Y.
H. A. Webster, M. C. B. ... New York, N. Y.
Marietta & Cin. R. R. 4-8½ g. 312 m. 65 lo. 1,422 c.
Jas. H. Stewart, Supt ... Cincinnati, O.
E. Bosley, M. M. ... Chillicothe, O.
Marietta & North Georgia R. R. 3 g. 24 m. 1 lo. 5 c.
Wm. Phillips, Pres ... Marietta, Ga.
E. A. Withers, M. M. ... Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 87 m. 30 lo. 2,074 cars.
Samuel Schoch, Gen. Man ... Marquette, Mich.
R. M. McCauley, Pur. Agt ... Marquette, Mich.
W. H. Williams, M. M. ... Marquette, Mich.
H. D. Lyons, M. C. B. ... Marquette, Mich.
McKean & Buffalo R. R. 4-8½ g. 22 m. 2 lo. 8 cars.
S. G. Godden, Supt ... Smethport, Pa.
Memphis & Charleston R. R. (See E. Tenn. Va. & Ga.)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 272 c.
E. K. Sibley, G. Man. & P. A. .. Little Rock, Ark.
Wm. E. Smith, Supt ... Memphis, Tenn.
Thos. Rennell, M. M. ... Argenta, Ark.
P. Twitchell, M. C. B. ... Argenta, Ark.
Mexican National Ry. (See Tex.-Mex.)
Michigan Cen. R. R. 4-8½ g. 958 m. 233 lo. 6,552 c.
H. B. Ledyard, Gen. Man ... Detroit, Mich.
E. C. Brown, Asst. Gen. Supt ... Jackson, Mich.
Allan Bourn, Pur. Agt ... Detroit, Mich.
S. H. Edgerly, Gen. M. M. ... Jackson, Mich.
Robert Miller, Gen. M. C. B. ... Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, Supt ... Bay City, Mich.
R. P. Baillie, M. M. ... Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, Supt ... Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, Supt. Chicago, Ill.
Middleburg & Schoharie; and
Schoharie Valley R. Rs. 4-8½ g. 10 m. 2 lo. 4 cars.
S. S. Danforth, Gen. Supt ... Middleburg, N. Y.
Middleton & Crawford R. R. 4-8½ g. 13 m. 1 lo. 5 c.
D. Thompson, Supt ... Thompson Ridge, N. Y.
Midland; Whitby, Port Perry & Lindsay; Grand
Junc.; and Victoria Rys. 4-8½ g. 333 m. 25 lo. 800 c.
James Holden, Gen. Man ... Whitby, Ont.
M. & G. J. Rys.: W. B. Ferguson, Gen. Supt. and
C. H. Craft, G. Pur. Agt ... Port Hope, Ont.
Wm. Marling, Mech. Supt ... Port Hope, Ont.
Edward Douglas, M. C. B. ... Port Hope, Ont.
Wm. Polson, M. M. (G. J. Ry.). Belleville, Ont.
W. P. P. & L. Ry., J. J. Ross, Supt. .. Whitby, Ont.
Vic. Ry.: T. B. Tate, Man ... Toronto, Ont.
F. B. Polson, M. M. ... Lindsay, Ont.
H. H. Harry, M. C. B. ... Lindsay, Ont.
Midland No. Car. Ry. 4-8½ g. 95 m. 9 lo. 54 cars.
J. W. Andrews, Supt ... Newbern, N. C.
B. Manly, Supt. of Mach ... Newbern, N. C.
Milton & Sutherlin N. G. R. R. 3 g. 7 m. 1 lo. 5 cars.
W. T. Sutherlin, Pres ... Danville, Va.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 250 m. 28 lo. 809 cars.
H. G. H. Reed, Supt ... Milwaukee, Wis.
Chas. S. Hayden, Asst. Supt ... Manitowoc, Wis.
David B. Curtis, Asst. Supt ... Oshkosh, Wis.
S. Charnley, M. M. ... Manitowoc, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 42 cars.
Chas. E. Holland, Pr. & Supt ... Hancock, Mich.
W. H. Carr, Pur. Agt ... Hancock, Mich.
T. J. Shellhorn, M. M. & C. B. .. Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 20 m. 2 lo. 2 motors 39 cars.
Wm. McCrory, Supt. & Pur. Agt., and
R. Curtis, M. M. ... Minneapolis, Minn.
Minneapolis & St. L. Ry. 4-8½ g. 506 m. 60 lo. 1,850 c.
C. H. Hudson, Gen. Man ... Minneapolis, Minn.
E. Ryder, Supt ... Minneapolis, Minn.
H. A. Towne, Supt. of Mach. Minneapolis, Minn.
Missisquoi R. R. 4-8½ g. 28 m. 1 lo. 2 cars.
W. C. Smith, Manager ... St. Albans, Vt.
Mississippi Val. & Ship Island. 3-6 g. 20 m. 2 lo. 20 c.
A. L. Jaquith, Supt. & Pur. Agt. Vicksburg, Miss.
Peyton Harrison, M. M. ... Vicksburg, Miss.
Mississippi & Tenn. R. R. 5 g. 101 m. 11 lo. 194 c.
M. Burke, Supt ... Memphis, Tenn.
J. C. Ramsey, M. M. ... Memphis, Tenn.
S. J. Bolton, M. C. B. ... Memphis, Tenn.
Missour Pacific Ry. 4-8½ g. 2,132 m. 293 lo. 8,035 c.
A. A. Talmage, Gen. Man ... St. Louis, Mo.
A. W. Dickinson, Asst. Gen. Supt. St. Louis, Mo.
R. B. Lyle, Pur. Agt ... St. Louis, Mo.
John Hewitt, Supt. Mach ... St. Louis, Mo.
John Hodge, M. C. B. ... St. Louis, Mo.
Main Line. Warder Cumming, Supt. Sedalia, Mo.
C. L. Dunham, Supt. W'n Div. Kansas City, Mo.
R. D. Grant, M. M. ... St. Louis, Mo.
Geo. Walshe, M. M. ... Sedalia, Mo.
Ks. & Tex. Div., J. M. Eddy, Supt ... Sedalia, Mo.
Wm. T. Small, M. M. ... Parsons, Kan.
Dallas, Ex., L. L. Keller, Supt ... Dallas, Tex.
Cen. Br. Div., W. W. Fagan, Supt. Atchison, Kan.
H. V. Faries, M. M. ... Atchison, Kan.

Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, *Trustee*....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 5 lo. 80 cars.
W. L. Clark, *Gen Supt*....Columbus, Ga.
J. C. Albrecht, *M. M*....Columbus, Ga.
A. J. Nix, *M. C. B*....Columbus, Ga.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,180 cars.
A. L. Rives, *V. Pr. & Gen. Man*....Mobile, Ala.
R. H. Briggs, *Gen. M. M*....Whistler, Ala.
J. T. Booth, *M. C. B*....Whistler, Ala.
So'n Div., I. G. Motley, *Supt*....Mobile, Ala.
John Fitzgerald, *M. M*....Macon, Miss.
No'n Div.: E. S. Horsford, *Supt*. Jackson, Tenn.
M. T. Carson, *M. M*....Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 10 lo. 90 cars.
F. Ingate, *Supt*....Mobile, Ala.
Mont Alto R. R. 4-9 g. 21 m.
G. B. Weistling, *Supt*....Mont Alto, Pa.
Montgomery & Eufaula Ry. (*See Central of Ga.*)
Montour R. R. 4-8½ g. 11 m.
C. R. Brown, *Supt*....Imperial, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 76c.
W. A. Stowell, *Supt*....Montpelier, Vt.
Montrose Ry. 3 g. 28 m. 2 lo. 3 cars.
J. I. Blakslee, *Supt*....Mauch Chunk, Pa.
Morgan's Louisiana & Tex. (*See Tex. & N. O.*)
Mount Washington Ry. 3½ m. 6 lo. 6 pass. cars.
Walter Aiken, *Supt*....Franklin Falls, N. H.
Muncy Creek Ry. 4-8½ g. 10 m.
Benj. G. Welch, *Rec*....Hughesville, Pa.

N

Nantasket Beach R. R. 4-8½ g. 3 m. 2 lo. 6 cars.
Nantucket R. R. 3 g. 3½ miles.
P. H. Folger, *Supt*....Nantucket, Mass.
Narragansett Pier R. R. 4-8½ g. 8 m. 2 lo. 10 cars.
G. D. Lanphear, *Supt*....Place Dale, R. I.
Nashua & Rochester R. R. (*See Wor. & Nash.*)
Nashville, Chattanooga & St. Louis R'y.,
5 g. 508 miles 87 lo. 1,521 cars.
F. de Funiak, *Gen. Man*....Louisville, Ky.
J. W. Thomas, *Gen. Supt*....Nashville, Tenn.
M. J. C. Wrenne, *Supt*....Nashville, Tenn.
James Cullen, *M. M*....Nashville, Tenn.
J. G. Sawyer, *M. C. B*....Nashville, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 43 m. 3 lo. 11 c.
J. H. Fitzpatrick, *Supt*....Natchez, Miss.
Naugatuck R. R., 4-8½ g. 61 miles, 12 lo. 334 cars.
Geo. W. Beach, *Supt*....Waterbury, Ct.
Henry Hanford, *M. M*....Bridgeport, Ct.
Geo. W. Gray, *M. C. B*....Bridgeport, Ct.
Nevada Central R. R. (*See Union Pac.*)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, *Supt*....Grass Valley, Cal.
New Brunswick Ry. 4-8½ g. 194 m. 12 lo. 266 cars.
E. R. Burpee, *Supt*....Gibson, N. B.
Alfred Seely, *Pur. Agt*....Gibson, N. B.
Jesse Mathews, *M. M*....Gibson, N. B.
T. N. Burpee, *M. C. B*....Gibson, N. B.
New Brunswick & Can. Ry. 4-8½ g. 127 m. 12 lo. 184c.
Henry Osborn, *G. M. & P. A*. St. Andrew's, N. B.
John Stewart, *Supt*....St. Stephen, N. B.
Thos. Armstrong, *M. M*....St. Andrew's, N. B.
G. Houlton, *M. C. B*....St. Andrew's, N. B.
New Canaan R. R. 4-8½ g. 8 m. 2 lo. 4 cars.
Wm. St. John, *Supt*....New Canaan, Conn.
New Castle & Oil City R. R. 4-9 g. 38 m. 4 lo. 30 cars.
A. Vandiwort, *Supt*....New Castle, Pa.
New Haven & Derby R. R. 4-8½ g. 13 m. 3 lo. 58 c.
E. S. Quintard, *Supt*....New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 141 m. 21 lo. 510 c.
C. A. Goodnow, *Supt*....New Haven, Ct.
C. N. Yeamans, *Pur. Agt*....New Haven, Ct.
Henry Fox, *M. M*....New Haven, Ct.
John Sweeny, *M. C. B*....New Haven, Ct.
New Jersey & New York Ry. 6 g. 43 m. 6 lo. 40 c.
J. D. Hasbrouck, *Gen. Man* Jersey City, N. J.
J. S. Drake, *M. M*....Jersey City, N. J.
New Jersey Southern Ry. (*See Central, N. J.*)
New London Northern R. R. (*See Central Ver.*)
New Orleans Pacific Ry. 5 g. 85 m. 10 lo. 206 cars.
H. S. Morse, *Supt*....New Orleans, La.
New Orleans & Selma R. R. 5 g. 21 m. 1 lo. 9 cars.
L. B. Scofield, *Supt*....Selma, Ala.
N. Y. Central & Hudson River R.R.
4-8½ g. 962 m. 676 lo. 22,539 cars.
J. M. Toucey, *Gen. Supt*....New York, N. Y.
R. C. Moore, *Pur. Agt*....New York, N. Y.
Wm. Buchanan, *Supt. M. P*....New York, N. Y.
L. Garey, *Supt. Car Dept*....New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, *Supt*. do.
P. McQ. Gibson, *M. M*....New York, N. Y.
C. E. Garey, *M. C. B*....Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, *Supt*. N. York, N. Y.
Peter Smith, *M. C. B*....New York, N. Y.
E'n Div.: Zenas C. Priest, *Supt*....Utica, N. Y.
G. B. Van Vorst, *M. M*....West Albany, N. Y.
D. Hoit, *M. C. B*....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, *Supt*. Rochester, N. Y.
Amos Gould, *M. M*....E. Buffalo, N. Y.
S. L. White, *M. M*....Syracuse, N. Y.
E. A. Olmstead, *M. C. B*....E. Buffalo, N. Y.
C. H. Burchard, *M. C. B*..E. Rochester, N. Y.
Ed. Donahy, *M. C. B*....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 269 m. 36 lo. 1,063c.
L. Williams, *Gen. Man*....Cleveland, O.
H. L. Morrill, *Gen. Supt*....Cleveland, O.
Eas'tn Div.: Wallace McGrath, *Supt*....Erie, Pa.
Mid. Div.: C. H. Cory, *Supt*....Fostoria, O.
West'n Div.: M. E. Wattles, *Supt*....Chicago, Ill.
New York City & Northern. 4-8½ g. 52 m. 7 lo. 91 c.
F. S. Gannon, *Gen. Supt*....High Bridge, N. Y.
M. McNally, *M. of M*....High Bridge, N. Y.
New York, Lake Erie & Western R. R.
4-8½ g. 1,010 m. 544 loco. 24,400 cars.
Robt. Harris, *V. Pr. & G. Man*. New York, N.Y.
E. S. Bowen, *Gen. Supt*....New York, N. Y.
J. A. Hardenburg, *Pur. Agt*..New York, N. Y.
F. M. Wilder, *Supt. M. P. & M*...Susqueh'a, Pa.
E'n Div.: E. O. Hill, *Supt*....Jersey City, N. J.
J. H. Vreeland, *M. M*....Jersey City, N. J.
J. N. Mileham, *M. C. B*....Jersey City, N. J.
Del. Div.: Chas. Neilson, *Supt*. Port Jervis, N. Y.
J. Van Vechten, *M. M. & C. B*. Pt. Jervis, N. Y.
Susq. Div.: R. B. Cable, *Supt*....Elmira, N. Y.
V. Blackburn, *M. M*....Susquehanna, Pa.
D. B. Goodell, *M. C. B*....Elmira, N. Y.
Buf. & R. Divs.: C. W. Gardner, *Supt.*; and
G. B. Ross, *M. M*....Buffalo, N. Y.
M. Wilder, *M. C. B*....Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, *Supt* do.
W'n Div.: W. B. Coffin, *Supt*..Hornellsville, N. Y.
E. H. Griggs, *M. M*....Hornellsville, N. Y.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 102 lo. 2,416 cars.
E. M. Reed, *V. P. & Gen. Supt*..New Haven, Ct.
R. N. Dowd, *Pur. Agt*....New Haven, Ct.
N. Y. & N. H. Div.: J. M. Moody, *Supt*. New York.
Shore Div.: W. H. Stevenson, *Supt*. N. Haven, Ct.
H. Kettendorf, *Supt. M. P*...New Haven, Ct.
Jas. Denver, *M. C. B*....New Haven, Ct.
Hart. Div.: C. S. Davidson, *Supt*....Hartford, Ct.
John Henny, Jr., *Supt. M.P. & M. C. P*.... do.
New York, Ontario & Western Ry.
4-8½ g. 345 m. 79 lo. 1,848 cars.
Jas. E. Childs, *Gen. Supt*....Middletown, N. Y.
Chas. Clark, *Pur. Agt*....Middletown, N. Y.
Edw. Minshull, *M. M. & C. B*. Middletown, N. Y.
Mid. Div.: N. R. Hankins, *Supt*. Middletown, N. Y.
No'n Div.: C. W. Lanpher, *Supt*....Norwich, N. Y.
New York, Pennsylvania & Ohio R. R.
4-8½ g. 558 m. 215 lo. 7,387 cars.
P. D. Cooper, *Gen. Man*....Cleveland, Ohio.
J. M. Ferris, *Supt. Trans*....Cleveland, Ohio.
J. H. Holway, *Pur. Agt*....Cleveland, Ohio.
Wm. Fuller, *Gen. M. M. & C. B*...Cleveland, O.
S. V. Smith, *Asst. Gen. M. C. B*....Kent, Ohio.
E'n Div.: A. L. Dunbar, *Supt*....Meadville, Pa.
J. A. Cooper, *M. M*....Meadville, Pa.
D. S. Dockstader, *M. C. B*....Meadville, Pa.
J. F. Fosdick, *For. Car Rep*. Salamanca, N. Y.
W'n Div.: J. W. Alsop, *Supt*....Galion, O.
Wm. Hill, *M. M*....Galion, O.
J. W. Holmes, *For. Car Rep*....Galion, O.
Geo. Wilson, *For. Car Rep*....Dayton, Ohio.
Maho'g Div.: N. F. Wood, *Asst. Supt*. Cleveland, O.
N. Wright, *M. M*....Cleveland, O.
C. N. Thorp, *Act. M. C. B*....Cleveland, O.

New York, Providence & Boston R. R.
4-8½ g. 72 m. 29 lo. 430 cars.
J. B. Gardner, *Supt*....Providence, R. I.
Giles F. Ward, *Pur. Agt*....Stonington, Conn.
J. H. Anderson, *M. M. & C. B*. Providence, R. I.
N. Y., Susquehanna & W'n. 4-8½ g. 86 m. 20 lo. 242 c.
H. M. Britton, *Gen. M. & P. A*. New York, N. Y.
W. C. Ennis, *M. M. & C. B*...Wortendyke, N. J.
N. Y. & Brighton Beach Ry. 3 g. 3 miles.
Geo. Edw. Harding, *Gen. Supt*. New York, N. Y.
N. Y. & Greenwood Lake Ry. 4-8½ g. 41 miles.
J. H. Tinney, *Acting Supt*....Jersey City, N. J.
G. A. Hobart, *Pur. Agt*....Jersey City, N. J.
N. Y. & Manhattan Beach Ry. 3 g. 23 m. 12 lo. 128 c.
D. C. Corbin, *Man. Dir*....New York, N. Y.
New York & New England R. R.
4-8½ g. 463 m. 127 lo. 3,326 cars.
S. M. Felton, Jr., *Gen. Man*....Boston, Mass.
W. W. McKim, *Pur. Agt*....Boston, Mass.
O. M. Shepard, *Supt. of Trans*...Boston, Mass.
Geo. E. Boyden, *Supt. M. P. & M*. Boston, Mass.
Elias E. Pratt, *M. C. B*....Norwood, Mass.
Nor. Div.: P. St. M. Andrews, *Supt*...Norwich, Ct.
Richard Colburn, *M. M*....Norwich, Ct.
Prov. Div.: L. W. Palmer, *Supt*..Providence, R. I.
W'n Div.: J. C. Rawn, *Supt*....Hartford, Ct.
E. M. Humstone, *M. M*....Hartford, Ct.
Newburg, Duchess & Conn. R. R. 4-8½ g. 58 miles.
C. S. Kimball, *Gen. Supt*. Dutchess Junc., N. Y.
W. G. Van Buskirk, *M. M. & C. B*. do
Newport & Wickford R. R. 4-8½ g. 3 m. 1 lo. 4 cars.
Theo. Warren, *Supt*....Newport, R. I.
Norfolk & Western R. R. 5 g. 428 m. 82 lo. 1,044 c.
Frank Huger, *Supt. Trans*....Lynchburg, Va.
Henry Fink, *2d V. Pr. & Gen. Man*. Lynchb'g, Va.
J. P. Minetree, *Storekeeper*....Petersburg, Va.
Va. & Tenn. Div.: F. Sterk, *M. M*. Lynchburg, Va.
W. A. Morgan, *M. C. B*....Lynchburg, Va.
Nor. & Pt. Div.: N. M. Osborne, *Mast. Trans*.,
J. T. Robinett, *M. M. & C. B*. Petersburg, Va.
North-Eastern R. R. of Ga. 5 g. 40 m. 2 lo. 18 cars.
H. R. Bernard, *Supt*....Athens, Ga.
Jno. J. Longest, *M. C. B*....Athens, Ga.
North-Eastern R. R. (S. C.) (*See Wil. & Wel.*)
North Pacific Coast R. R. 3 g. 80 m. 12 lo. 316 cars.
David Nye, *Gen. Supt*....San Rafael, Cal.
W. F. Russell, *Pur. Agt*....San Francisco, Cal.
Jas. Walch, *M. M*....Sancelito, Cal.
North-Western Ohio Ry. (*See Penna. Co.*)
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, *Supt*....Concord, N. H.
Ed. Studley, *M. M. & C. B. & Pur. Agt*. do.
Northern (N. J.) R. R. (*See N. Y., L. E. & W'n.*)
Northern Central Ry. (*See Penna. (R R.)*)
North'n Pacific R. R. 4-8½ g. 1,193 m. 104 lo. 3,089 c.
Herman Haupt, *Gen. Man*....St. Paul, Minn.
E. T. Williams, *Pur. Agt*....St. Paul, Minn.
Geo. W. Cross, *Supt. Trans*....St. Paul, Minn.
A. P. Farrar, *Supt. Mach*....Brainerd, Minn.
St. P. & Minn. Divs.: B. McHugh, *Supt*., do.
Dakota Div.: C. T. Hobart, *Supt*....Fargo, Dak.
A. Rupert, *M. M*....Fargo, Dak.
Mo. Div.: D. R. Taylor, *Supt*....Bismarck, Dak.
E. F. Doran, *M. M*....Bismarck, Dak.
Pacific Div.: J. W. Sprague, *Gen. Supt*.; and
Otis Sprague, *Supt*....New Tacoma, W. T.
C. Z. Sanders, *M. M*....New Tacoma, W. T.
Thos. G. Davis, *M. C. B*..New Tacoma, W. T.
Northern & North-W'n Ry. 5-6 & 4-8½ g. 50 lo. 1,033 c.
James Webster, *Supt*....Toronto, Can.
C. W. Postlethwaite, *Pur. Agt*....Toronto, Can.
P. Clarke, *M. M*....Toronto, Can.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,160 cars.
A. A. Gaddis, *Gen. Man*....Malone, N. Y.
Abr. Klohs, *Supt. & M. M*....Malone, N. Y.
Ohio Ry. 4-8½ g. 1,125 m. 305 lo. 9,313 cars.
J. H. Devereux, *Pres*....Cleveland, O.
E. B. Thomas, *Gen. Man*....Cleveland, O.
J. L. Yale, *Pur. Agt*....Cleveland, O.
W. F. Turreff, *Gen. M. M*....Cleveland, O.
(1) Cl., Col., Cin. & Ind. Divs. 471 m. 162 lo. 4,768 c.
Col. & Cin. Div.: Robt. Blee, *Supt*....Cleveland, O.
W. L. Gilmore, *M. M*....Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept*. do.
Ind'p'lis Div.: C. C. Gale, *Supt*..Indianapolis, Ind.
Jas. Eckford, *M. M*....Brightwood, Ind.
N. Mark, *G. For. Car Dept*. Brightwood, Ind.
(2) Ind'p'lis & St. Louis R. R. 266 m. 56 lo. 2,276 c.
C. C. Gale, *Gen. Supt*....Indianapolis, Ind.
T. W. Ransom, *M. M*....Mattoon, Ill.
Geo. H. Pratt, *M. C. B*....Mattoon, Ill.
(3) Cin., Ham. & Day. Divs. 341 m. 84 lo. 2,314 c.
J. H. Barrett, *Gen. Supt*....Cincinnati, O.
D. S. Cross, *M. M*....Cincinnati, O.
W. H. H. Allison, *G. For. Car Dept*. do.
C. R. & C. Div.: W. S. Brewer, *M. M*. Richm'd, Ind.
Day. & Un. Div.: H. S. Gordon, *M. M*. Dayton, O.
D. & M. Rd.: E. E. Dwight, *Supt*....Toledo, O.
Jno. Black, *M. M*....Lima, Ohio.
Ohio Central R. R. 4-8½ g. 230 m. 30 lo. 3,201 cars.
G. G. Hadley, *Gen. Man*....Toledo, O.
W. H. Vandegrift, *Supt*....Toledo, O.
F. W. Stewart, *Pur. Agt*....Toledo, O.
J. B. Morgan, *M. M. & C. B*....Bucyrus, O.
Ohio Southern R. R. (*See Ind., Bl. & W.*)
Ohio & Mississippi Ry. 4-9 g. 615 m. 14 lo. 2,501 cars.
W. W. Peabody, *Gen. Supt*....Cincinnati, O.
G. E. Atwood, *Pur. Agt*....Cincinnati, O.
Cin. Div.: C. B. Cole, *Supt*....Seymour, Ind.
John Thumser, *M. M*....Seymour, Ind.
J. P. Coulter, *M. C. B*....Aurora, Ind.
Arthur Donaldson, *M. M*....Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, *Supt*. St. Louis, Mo.
J. W. Stokes, *M. M*. (Spring. Div.)..Pana, Ill.
Louisv. Div.: C. B. Cole, *Supt*....Louisville, Ky.
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, *Gen. Man*....Oil City, Pa.
Old Colony R. R. 4-8½ g. 463 m. 110 lo. 2,862 cars.
J. R. Kendrick, *Gen. Supt*....Boston, Mass.
R. W. Husted, *Pur. Agt*....Boston, Mass.
J. K. Taylor, *M. M*....Boston, Mass.
A. Gleason, *M. C. B*....Boston, Mass.
Main Li. Div.: J. H. French, *Supt*...Boston, Mass.
Cape Cod Div.: C. H. Nye, *Supt*..Hyannis, Mass.
No. Div.: S. A. Webber, *Supt*....Fitchburg, Mass.
George W. Reynolds, *M. M*....Taunton, Mass.
Sam. Stevens, *M. C. B*....Taunton, Mass.
Olean, Bradford & Warren; Bradford; Kinzua; and
Kendall & Eldred R. Rs. 3 g. 38 m. 9 lo. 222 cars.
J. W. Watson, *Gen. Supt*....Olean, N. Y.
J. H. Poole, *Pur. Agt*....Buffalo, N. Y.
Charles Turner, *M. M. & C. B*....Olean, N. Y.
Olympia & Tenino R. R. 3 g. 15 miles.
William Mitchell, *Supt*....Olympia, W. T.
Oregon Ry.& Nav.Co. 4-8½ g. 225 m. 31 lo. 930 cars.
A. Brandt, *M. M*....Portland, Ore.
C. H. Prescott, *Manager*....Portland, Ore.
J. M. Buckley, *Asst. Man. & Act. Supt*. do.
Geo. J. Ainsworth, *Supt*. (R. Div.) Pt'land, Ore.
K Von Oterendorf, *Supt*. (O.Div.) S.F'cisco, Cal.
J. M. Drake, *Pur. Agt*....Portland, Ore.
C. C. Hobart, *Gen. M. M*....The Dalles, Ore.
Chas. A. Phipps, *M. C. B*....The Dalles, Ore.
N. G. Div.: Wm. Reed, *Man*....Portland, Ore.
James Walch, *M. M*....Portland, Ore.
Oregon & California R. R. 4-8½ g. 200 m. 14 lo. 286 c.
R. Hochler, *Act. Man*....Portland, Ore.
J. Brandt, Jr., *Gen. Supt*....Portland, Ore.
Owensboro & Nashville R. R. 5 g. 35 m.
W. L. Gude, *Gen. Supt*....Owensboro, Ky.
Oxford & Henderson R. R. 13 miles.
A. H. A. Williams, *Pres*....Oxford, N. C.

P

Paducah & Elizabeth R. R. 5 g. 186 m. 19 lo. 536 c.
Robert Meek, *Gen. Supt*....Elizabethtown, Ky.
W. D. Robb, *M. M. & C. B*. Elizabethtown, Ky.
Painesville & Youngstown R. R. 3 g. 65 m. 7 lo. 319 c.
J. A. Newcome, *Supt*....Painesville, O.
J. H. Jones, *M. M*....Painesville, O.
Panama R. R. 5 g. 58 m. 14 lo. 534 cars.
H. A. Woods, *Supt*....Aspinwall, U. S. Col.
Thomas S. O'Brien, *M. M*. Aspinwall, U. S. Col.

Parker & Karns City; and
Karns City & Butler R. Rs. 3 g. 27 m. 5 lo. 84 cars.
W. C. Moberly, *Gen. Supt*....Parker City, Pa.
Philip Davies, *M. M*....Parker City, Pa.
Wm. Wolford, *M. C. B*....Parker City, Pa.
Passumpsic R. R. 4-8½ g. 165 m. 28 lo. 105 cars.
E. Raymond, *Pres. & Pur. Agt*..Boston, Mass.
H. E. Folsom, *Supt*....Lyndonville, Vt.
L. L. Brigham, *M. M*....Lyndonville, Vt.
L. F. Woodard, *M. C. B*....Lyndonville, Vt.
Paulding & Cecil Ry. 4-8½ g. 7 m. 2 lo. 24 cars.
S. Frank Eagle, *Pres*....Cecil, O.
Paw Paw and Tol.& S. Haven Rds. 3 g. 13 m. 2 lo. 7 c.
J. Ihling, *Supt*....Lawton, Mich.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
S. M. Manifold, *Supt. & Pur. Agt*....York, Pa.
E. H. Williams, *M. C. B*....York, Pa.
Peninsula R. R. (*See Wor. & Som.*)
Pennsylvania Co.'s (9) Roads.
4-9 g. 2,838 m. 817 lo. 29,432 cars.
D. W. Caldwell, *Gen. Man*....Pittsburg, Pa.
W. A. Baldwin, *Man*....Pittsburg, Pa.
Wm. Mullins, *Gen. Pur. Agt*....Pittsburg, Pa.
Joseph Wood, *Supt. M. P*....Fort Wayne, Ind.
(1) Clev. & Pittsb'g R. R. 4-9 g. 224 m. 97 lo. 3,336 c.
R. V. Smith, *Asst. Gen. Man*....Cleveland, O.
Philip Bruner, *Supt*....Wellsville, O.
N. E. Chapman, *Mast. of Mach*. Cleveland, O.
(2 & 3) Erie & Ashtabula Rds. 178 m. 29 lo. 1,340 c.
John M. Kimball, *Supt*....Youngstown, O.
J. A. Wood, *For. Shops*....Erie, Pa.
(4) Indianap. & Vincennes Rd. 117 m. 11 lo. 303 cars.
Jas. J. Turner, *Supt*....Indianapolis, Ind.
M. M.
(5) Jeffersonville, Madison & Indianapolis R. R.
4-9 g. 217 m. 47 lo. 784 cars.
E. W. McKenna, *Supt*....Louisville, Ky.
Wm. Swanston, *M. M*....Jeffersonville, Ind.
Edw. Austin, *M. C. B*....Jeffersonville, Ind.
(6) Northwestern Ohio Ry. 4-9 g. 79 m.
J. S. Morris, *Supt*....Toledo, O.
(7) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 278 lo. 6,782 cars.
E'n Div.: A. B. Starr, *Supt*....Allegheny, Pa.
Geo. J. Parkin, *M. M*....Allegheny, Pa.
G. W. Lowe, *For. Shops*....Crestline, O.
W'n Div.: C. D. Law, *Supt*....Ft. Wayne, Ind.
F. D. Casanave, *M. M*....Ft. Wayne, Ind.
(8) Pittsburg, Cincinnati & St. Louis Ry.
4-9 g. 1,172 m. 336 lo. 6,482 cars.
Gen. Supt....Columbus, O.
G. W. Rhodes, *Supt M. P. & M*....Columbus, O.
P. & Col. Div.: E. B. Taylor, *Supt* Dennison, O.
Ross Kells, *M. M*....Dennison, O.
A. K. Mansfield, *M. C. B*....Steubenville, O.
Robt. Curtis, *M. M*....Columbus, O.
Thos. Chamberlain, *M. C. B*....Columbus, O.
C. & M. V. Div.: W. F. Black, *Supt*. Zanesville, O.
Leroy Kells, *M. M*....Lancaster, O.
Daniel Jewell, *M. C. B*....Lancaster, O.
Li. Mi. Div.: Ralph Peters, *Supt*....Cincinnati, O.
Leroy Kells, *M. M*....Cincinnati, O.
M. P. Ford, *M. C. B*....Columbus, O.
Ind. Divs.: J. F. Miller, *Supt*....Richmond, Ind.
Geo. H. Prescott, *M. M*....Logansport, Ind.
Chas. H. Starr, *M. C. B*....Logansport, Ind.
M. J. Rogers, *M. M*....Indianapolis, Ind.
Chi. Div.: C. C. F. Bent, *Supt*..Logansport, Ind.
(9) Terre Haute & Indianapolis R. R.
4-9 g. 374 m. 83 lo. 2,868 cars.
Joseph Hill, *Gen. Supt*....St. Louis, Mo.
C. R. Peddle, *P. Agt. & Supt. M. P. & M*.; and
E. D. Carter, *M. C. B*....Terre Haute, Ind.
Clinton Idler, *M. M*....Indianapolis, Ind.
Chas. Butler, *M. M*....Effingham, Ill.
A. W. Quakenbush, *M. M*...Logansport, Ind.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 2,704 m. 1,271 loco. 51,894 cars.
Frank Thomson, *Gen. Man*....Philadelphia, Pa.
Enoch Lewis, *Pur. Agt*....Philadelphia, Pa.
John Reilly, *Supt. Trans*....Philadelphia, Pa.
T. N. Ely, *Supt. Mo. Po*. (4 Gen. Divs.) Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-9 g. 1,105 m. 627 lo. 35,583 cars.
Charles E. Pugh, *Gen. Supt*....Altoona, Pa.
Phila. Div.: S. M. Prevost, *Supt*. Philadelphia, Pa.
H. D. Garrett, *M. M*....W. Philadelphia, Pa.
I. W. Van Houten, *M. C. B*....W. Phila., Pa.
Mid. Div.: H. H. Carter, *Supt*....Harrisburg, Pa.
E. L. Caum, *M. M*....Harrisburg, Pa.
Samuel W. Myers, *M. C. B*...Harrisburg, Pa.
Alt'a Div.: Wm. J. Latta, *Supt*....Altoona, Pa.
G. W. Strattan, *M. M*....Altoona, Pa.
John P. Levan, *M. C. B*....Altoona, Pa.
Pitts. Div.: Robert Pitcairn, *Supt*....Pittsburg, Pa.
D. O. Shaver, *M. M*....Pittsburg, Pa.
J. G. Stewart, *M. C. B*....Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt*. Blairsville, Pa.
C. B. Street, *M. M*....Blairsville, Pa.
M. H. Falls, *M. C. B*....Blairsville, Pa.
Fred. Div.: J. B. Hutchinson, *Supt*....York, Pa.
Tyrone Div.: S. S. Blair, *Supt*....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt*. Lewistown, Pa.
Bed. Div.: Thos. A. Roberts, *Supt*...Bedford, Pa.
Monong. Div.: David M. Watt, *Supt*. Pittsburg, Pa.
Wm. Lininger, *M. M*....Pittsburg, Pa.
(2) United R. Rs. of N. J. Divs. 414 m. 257 lo. 4,668 c.
F. Wolcott Jackson, *Gen. St*..Jersey City, N. J.
N. Y. Div.: Jas. McCrea, *Supt*. Jersey City, N. J.
H. S. Hayward, *At. St. M. P*. Jersey City, N. J.
David H. Baker, *M. C. B*...Jersey City, N. J.
L. A. Bosdevex, *M. M*....Jersey City, N. J.
E. F. Bosdevex, *M. C. B*....Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt*. Lambertv., N. J.
R. McDowell, *M. M*....Lambertville, N. J.
Amboy Div.: J. S. Buckalew, *Supt*. Camden, N. J.
Thos. Kerr, *M. M*....So. Amboy, N. J.
P. S. Bogart, *M. C. B*....So. Amboy, N. J.
(3) West Jersey R. R. 4-9 g. 163 m. 22 lo. 342 cars.
Joseph Crawford, *Supt*....Camden, N. J.
W. McAllister, *M. M*....Camden, N. J.
C. C. Williams, *M. C. B*....Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 212 m. 86 lo. 1,488 c.
H. F. Kenney, *Gen. Supt*....Philadelphia, Pa.
S. A. Hodgman, *M. M*....Wilmington, Del.
Wm. Lundgren, *M. C. B*....Wilmington, Del.
Cen. Div.: L. K. Lodge, *Supt*.. Philadelphia, Pa.
S. D. Danfield, *M. M. & C. B*....Chester, Pa.
Del. Div.: I. N. Mills, *Supt*....Philadelphia, Pa.
(5) Phila. & Erie R. R. Divs.: 376 m. 117 lo. 3,481 c.
R. Neilson, *Gen. Supt*....Williamsport, Pa.
R. H. Soule, *Supt. Mo. Po*....Williamsport, Pa.
E'n. Div.: Thos. Gucker, *Supt*. Williamsport, Pa.
Sun. H. & W. Div.: F. L. Sheppard, *Supt*. do.
W. F. Beardsley, *M. M*....Sunbury, Pa.
Mid. Div.: E. B. Westfall, *Supt*....Renova, Pa.
Wm. L. Holman, *M. M*....Renova, Pa.
West'n Div.: J. W. Reynolds, *Supt*....Erie, Pa.
W. T. Smith, *M. M*....Erie, Pa.
(6) Northern Central Ry. 4-9 g. 323 m. 152 lo. 6,163 c.
A. W. Sumner, *Pur. Agt*....Baltimore, Md.
Susq., Shamokin, Elmira & Canadaigua Divs.:
Robert Neilson, *Gen. Supt*... Williamsport, Pa.
R. H. Soule, *Supt. M. P*....Williamsport, Pa.
Susq. Div.: Thos. Gucker, *Supt*. Williamsport, Pa.
G. W. Demarest, *M. C. B*...Williamsport, Pa.
Sham. Div.: *Supt*....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt*..Elmira, N. Y.
Jas. Strode, *M. M*....Elmira, N. Y.
J. C. Dyott, *M. C. B*....Elmira, N. Y.
Baltimore Divs. of Northern Central; and
(7) Baltimore & Potomac R. R. 128 m. 29 lo. 356 c.
G. C. Wilkins, *Supt*....Baltimore, Md.
A. W. Sumner, *Pur. Agt*....Baltimore, Md.
A. O. Dayton, *Supt. Mo. Po*....Baltimore, Md.
J. M. Coale, *M. M*....Baltimore, Md.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 2,871 c.
J. B. Smith, *Gen. Supt*....Dunmore, Pa.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, *Gen. Supt*....Ridgeway, Pa.
Pennsylvania & New York R. R. (*See Lehigh.*)
Pensacola & Perdido R. R. 6 g. 8 m. 5 lo. 73 cars.
B. F. Simmons, *Pr. & Supt*....Pensacola, Fla.
People's Ry. 4-8½ g. 6 m. 3 lo. 17 cars.
Chas. Baker, *Pres*....Pottsville, Pa.
Peoria, Decatur & Evansville Ry.
4-8½ g. 215 m. 12 lo. 725 cars.
G. L. Bradbury, *Gen. Man*....Peoria, Ill.
G. R. Cobleigh, *Supt. & Pur. Agt*....Peoria, Ill.

P. Reilly, *M. M*....Mattoon, Ill.
Peoria & Farmington R. R. 25 miles.
D. P. Phelps, *Gen. Man*....Monmouth, Ill.
John F. Wallace, *Supt*....Monmouth, Ill.
Peoria & Pekin Union Ry. 4-8½ g. 20 miles.
Thos. B. Burnett, *Gen. Supt*....Peoria, Ill.
R. F. Hurd, *M. M. & C. B*....Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 68 miles.
D. B. Clack, *Supt*....Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 89 cars.
R. M. Sully, *Gen. Supt*....Petersburg, Va.
L. E. Clark, *Pur. Agt*....Petersburg, Va.
R. B. Andrew, *M. M*....Petersburg, Va.
J. W. Fleming, *M. C. B*....Petersburg, Va.
Phila., Marlton & Medford R. R. (*Op. by Cam. & At.*)
Phila., Wilmington & Balt. R. R. (*See Penna. R. R.*)
Phila. & Atlantic City Ry. 3-6 g. 65 m. 11 lo. 134 cars.
Ellis Clark, *Supt. & Pur. Agt*. Philadelphia, Pa.
J. W. Wright, *M. M*....Camden, N. J.
E. Lippincott, *M. C. B*....Camden, N. J.
Phila. & Reading. 4-8½ g. 869 m. 516 lo. 21,960 cars.
John E. Wootten, *Gen. Man*..Philadelphia, Pa.
W. S. Wilson, *Pur. Agt*....Philadelphia, Pa.
Geo. Eltz, *Supt. Trans*....Reading, Pa.
L. B. Paxon, *Eng. of Mach*....Reading, Pa.
John H. Rankin, *M. C. B*....Reading, Pa.
No. Pa. & B. Brk. Div.: E. A. Sweigard, *Supt*., and
Jackson Richards, *M. M*....Philadelphia, Pa.
C. & W. Br.: D. C. Reinhart, *Sup*. Williamsport, Pa.
W. H. Ellis, *M. M*....Catawissa, Pa.
C. D. Ellis, *M. C. B*....Catawissa, Pa.
Leb. & Tr. Br.: H. W. Tracy, *Supt*. Pine Grove, Pa.
Coal Br.: J. H. Olhausen, *Supt*. Mahony Plane, Pa.
R. & C. Br.: A. M. Wilson, *Supt*...Columbia, Pa.
P. N. & N. Y. Rd.: W. M. Geary, *S*. Morristown, Pa.
S. & Le. Rd.: E. Dale, *Supt*....Reading, Pa.
Pittsburg, Bradford & Buffalo Ry. 3 g. 31 m. 4 lo. 79c.
J. M. Dickey, *Gen. Man*....Foxburg, Pa.
M. Mandeville, *Supt*....Foxburg, Pa.
Pittsburg, Cincinnati & St. Louis Ry. (*See Penna. Co.*)
Pittsburg, Ft. Wayne & Chicago Ry. (*See Penna. Co.*)
Pittsburg Southern Ry. 3 g. 38 m. 4 lo. 64 cars.
Jos. Ramsey, Jr., *Supt. & P. A*...Pittsburg, Pa.
W. S. Marshall, *M. M*....Pittsburg, Pa.
E. B. Gosline, *M. C. B*....Pittsburg, Pa.
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 388 c.
James M. Bailey, *Gen. Supt*....Pittsburg, Pa.
A. C. Hays, *Supt*....Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 30 lo. 1,688 c.
W. C. Quincy, *Gen. Man*....Pittsburg, Pa.
R. W. Jones, *Mast. Trans*....Pittsburg, Pa.
S. W. Haines, *M. M*....Pittsburg, Pa.
Pittsburg & Western R. R. 3 g. 47 m. 2 lo. 76 cars.
J. J. Saint, *Gen. Man*....Allegheny, Pa.
W. J. Bonner, *Supt*....Allegheny, Pa.
W. L. Hofecker, *M. M*....Zelienople, Pa.
Port Huron & No.-Western Ry. 3 g. 105 m. 4 lo. 66 c.
H. McMoran, *G. Man. & P. A*. Port Huron, Mich.
I. R. Wadsworth, *Supt*....Port Huron, Mich.
Chas. Deifenbaugh, *M. M*...Port Huron, Mich.
Benj. Hillier, *M. C. B*....Port Huron, Mich.
Port Jervis & Monticello R. R. 6 g. 24 m. 2 lo. 13 c.
M. V. Heller, *Gen. Man*....Port Jervis, N. Y.
Port Royal & Augusta Ry. 5 g. 112 m. 11 lo. 235 c.
Gen. Supt....Augusta, Ga.
Geo. Riley, *M. M*....Port Royal, S. C.
J. H. Milton, *M. C. B*....Port Royal, S. C.
Portland & Ogdensburg. 4-8½ g. 114 m. 8 lo. 167 c.
J. Hamilton, *Gen. Supt. & P. A*..Portland, Me.
Geo. H. Poor, *M. M*....Portland, Me.
W. G. Brewer, *M. C. B*....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 175 c.
G. P. Wescott, *Supt. & Pur. Agt*. Portland, Me.
E. H. C. Tompson, *F. of Mach*....Portland, Me.
David Dow, *For. of Car Repairs*. Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 32 c.
W. M. Grafton, *Supt*....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 64 c.
J. A. Perkins, *Supt*....Poughkeepsie, N. Y.
John L. Driscoll, *M. M*....Poughkeepsie, N. Y.
Prince Edward County Ry. 4-8½ g. 32 m. 2 lo. 15 c.
G. W. McMullen, *Gen. Man*....Picton, Ont.
Prince Edward Island Ry. 3-6 g. 199 m. 17 lo. 280 c.
L. B. Archibald, *Supt. & Pur. Agt.*;
Jos. Unsworth, *M. Supt. & Storekeeper*; and
D. M. Fraser, *M. C. B*....Charlottetown, P. E. I.
Profile & Franconia Notch R. R. 3 g. 13 m. 2 lo. 12 c.
C. H. Greenleaf, *Supt*....Profile House, N. H.
Prospect Park & Coney I'd. 4-8½ g. 13 m. 8 lo. 144 c.
R. Schermerhorn, *Supt*....Coney Island, N. Y.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 5 lo. 38 c.
Waterman Stone, *Supt*....Providence, R. I.
Rufus Smith, *M. M. & C. B*....Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 3 lo. 83 c.
Wm. Tinkham, *Gen. Man*....Providence, R. I.
G. T. Richardson, *M. M*....Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 30 lo. 858 c.
W. E. Chamberlain, *Supt*....Providence, R. I.
A. Griggs, *M. M. & C. B*....Providence, R. I.
Pullman's Palace Car Co. 472 passenger cars.
A. B. Pullman, *2d V.-Pr. & G. M*.. Chicago, Ill.
Geo. F. Brown, *Gen. Supt*....Chicago, Ill.
Wm. A. Angell, *Pur. Agt*....Chicago, Ill.
S. W. Bretzfield, *Asst. Pur. Agt*. New York, N.Y.
A. Rapp, *Man*. (Chicago Works)..Chicago, Ill.
Fr. Bradley, *Supt*. (Det. Shops)..Detroit, Mich.

Q

Quebec Central Ry. 4-8½ g. 47 m. 3 lo. 79 cars.
A. Steele, *Supt*....Sherbrooke, Que.
Quebec, Montreal, Ottawa & Occidental Ry.
4-8½ g. 329 miles, 34 loco. 556 cars.
L. A. Senecal, *Gen. Supt*....Montreal, Can.
W. E. Blumhart, *Pur. Agt*....Montreal, Can.
A. Davis, *Mech. Supt*....Montreal, Can.
Quebec & Lake St. John Ry. 4-8½ g. 24 m. 3 lo. 43 c.
J. G. Scott, *Manager*....Quebec, Can.

R

Raleigh & Augusta Air-Line; Seaboard & Roanoke;
Raleigh & Gaston R. Rs. 4-8½ g. 275 m. 38 lo. 607 c.
J. M. Robinson, *Pr. & G. Man*...Baltimore, Md.
Raleigh Rds: J. C. Winder, *G. Supt. & Pur. Agt*.
B. R. Harding, *Supt. of Mach*. Raleigh, N. C.
R. J. Bishop, *M. C. B*....Raleigh, N. C.
S. & R. Rd.: E. G. Ghio, *M. Trans*. Portsmouth, Va.
J. A. Walton, *Pur. Agt*....Portsmouth, Va.
M. M. Pendleton, *Sup. M. P. & M*. Portsmo'th, Va.
Rensselaer & Saratoga R.R. (*See Del. & Hud. Can. Co.*)
Rhinebeck & Connecticut. 4-8½ g. 42 m. 5 lo. 85 c.
J. H. Jones, *Gen. Supt*....Rondout, N. Y.
John Dykeman, *M. M*....Rondout, N. Y.
John H. Decker, *M. C. B*....Rondout, N. Y.
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 14 lo. 129 cars.
E. T. D. Myers, *Gen. Supt*....Richmond, Va.
T. L. Courtney, *Pur. Agt*....Richmond, Va.
H. Khun, *M. M*....Richmond, Va.
W. H. Trainham, *M. C. B*....Richmond, Va.
Richmond & Allegheny R.R. 4-8½ g. 250 m. 3 lo. 27c.
Decatur Axtell, *Gen. Man*....Richmond, Va.
Geo. W. Agee, *Supt*....Richmond, Va.
J. P. Williams, *Pur. Agt*....Richmond, Va.
Geo. D. Harris, *M. M. & C. B*....Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
5 ft. gauge 1,183 miles 163 loco. 2,959 cars.
T. M. R. Talcott, *Gen. Man*....Richmond, Va.
R. H. Duesberry, *Pur. Agt*....Richmond, Va.
R. H. Wade, *Supt. Mo. Po*....Richmond, Va.
(1) Richmond & Danville and York Riv. Divs.
Wm. H. Green, *Supt*....Richmond, Va.
T. W. Gentry, *Asst. M. M*....Richmond, Va.
J. B. Vaughan, *For. Car Sh*....Richmond, Va.
(2) North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt*....Raleigh, N. C.
W. H. Turrentine, *M. M*. Company's Shops, N. C.
J. C. Holt, *For. Car Sh*. Company's Shops, N. C.
(3) Atlanta & Char. Air Line Div. 269 m. 30 lo. 415 c.
I. Y. Sage, *Supt*....Atlanta, Ga.
C. D. Wall, *M. M*....Atlanta, Ga.
Z. T. Smith, *For. Car Sh*....Atlanta, Ga.
(4) Charlotte, Col.& Aug. R. R. 191 m. 20 lo. 261 c.
G. R. Talcott, *Supt*....Columbia, S. C.
J. H. Green, *M. M*....Columbia, S. C.
J. H. Perkins, *For. Car Sh*....Columbia, S. C.

(5) Columbia & Greenville R. R. 5 g. 197 m. 22 l. 218 c.
J. W. Fry, *Supt*..................Columbia, S. C.
J. O Meredith, *For. E. & C. Rep.* Helena, S. C.
Richmond & Petersburg R. R. (*See Wil. & Weldon.*)
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 39 cars.
M. J. Gomila, *Rec. & Gen. Man* Brownsville, Tex.
G. W. Rendall, *M. M*.........Brownsville, Tex.
M. Markwood, *M. C. B*... ....Brownsville, Tex.
Rochester & Lake Ontario Ry. 4-8½ g 6 m. 2 lo. 10 c.
Henry S. Hebard, *Pres*... ....Rochester, N. Y.
Rochester & Pittsb'g. R.R. 4-8½ g. 108 m. 11 lo. 612 c.
Geo. E. Merchant, *Gen. Man*...Rochester, N.Y.
J. P. Hovey, *M. M*....... ....Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 12 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt.*.Rock Island, Ill.
R. I. & P. Ry.: H. B. Sudlow, *A. Supt. & P. A.* do
Joseph Elder, *M. M*................Peoria, Ill.
R. I & M. C. Rd.: B. T. Cable, *Supt.*R'k Island, Ill.
Rockwood & Tennessee Riv. Ry. 3 g. 6. m.
H. Clay Evans, *Supt*..........Rockwood, Tenn.
Rogersville & Jefferson R. R. 5 g. 16 m. 2 lo.
C. M. Lentz, *Supt*.......... ..Rogersville, Tenn.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 13 cars.
Eben Hillyer, *Supt*.......... .... Rome, Ga.
O. W. Harbin, *M. M. & C. B*......... Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 409 m. 51 lo. 1,248 cars.
E. A. Van Horne, *Gen. Supt*......Oswego, N. Y.
Geo. W. B. Cushing, *Pur. Agt.* New York, N. Y.
Geo. H. Haselton, *M. M. & C. B.*.Oswego, N. Y.
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 42 c
O. Hayford, *Supt*.................. Canton, Me.

S

Sabine & East Texas Ry. 4-8½ g. 25 miles.
R. H. Cousins, *Supt*............Beaumont, Tex.
Sacramento & Placerville R. R. 4-8½ g. 49 m. 3 lo. 68 c.
J. B. Wright, *Supt*...........Sacramento, Cal.
Jno. R. Watson, *Pur. Agt*.....Sacramento, Cal.
A. J. Stevens *M. M*...........Sacramento, Cal.
Benj. Welch, *M. C. B*.........Sacramento, Cal.
Saginaw Bay & Northw'n R. R. 4-8½ g. 20 miles.
E. W. Gerrish, *Supt*..........Pinconning, Mich.
Saginaw Valley & St. Louis R. R. 4-8½g. 35 m. 4 l. 64 c
N. W. Merrill, *Supt*.............Saginaw, Mich.
Salem & Eastern R. R. 4-8½ g. 9 miles.
R. T. Parker, *Supt*...............Salem, Mo.
Salisbury R. R. 4-8½ g. 9 m. 1 lo. 2 cars.
R. J. Batzer, *Supt*.............Meyersdale, Pa.
Sandy River R. R. 2 g. 18 m. 2 lo. 10 cars.
Joel Wilbur, *Supt*.................Phillips, Me.
San Francisco & No. Pac. 4-8½ g. 92 m. 7 lo. 171 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*..............Petaluma, Cal.
P. E. Dougherty, *Pur. Agt.* San Francisco, Cal.
Ed. Reynolds, *M. M*... ....Donahue, Cal.
John Martin, *M. C. B*..............Donahue, Cal.
San Luis Obispo & Santa Maria Val. R. R. 3 g. 11 m.
C. A. Haskin, *Supt. & P. Agt.* San Luis Obispo, Cal.
W. H. Masterman, *M. M.* San Luis Obispo, Cal.
J. M. Vincent, *M. C. B*....San Luis Obispo, Cal.
Santa Cruz R. R. 3 g. 21 m. Santa Cruz, Cal.
Savannah, Florida & W'n Ry. 5 g. 422 m. 26 lo. 396 c.
H. S. Haines, *Gen. Man*..........Savannah, Ga.
R. G. Fleming, *Supt*... ....Savannah, Ga.
W. B. McKee, *Pur. Agt*...........Savannah, Ga.
James D. Hollister, *M. of Mach.*.Savannah, Ga.
P. N. Raynal, *For. Car Dept*... Savannah, Ga.
Sav., Griffin & No. Ala. R. R. Op. by Central (Ga.).
Schuylkill & Lehigh R. R. 4-8½ g. 43 miles.
Elbridge Dale, *Supt*...........Reading, Pa.
Schoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8½ g. 131 m. 15 lo. 460 cars.
Geo Skinner, *Supt*...............Columbus, O
C. G. Browning, *M. M. & P. A.*.Portsmouth, O.
Seaboard & Roanoke R. R. (*See Ral. & Aug. A. L.*)
Selma & Greensboro R. R. 5 g. 45 m. 2 lo. 39 cars.
A. M. Fowlkes, *Supt*......... .. Selma, Ala.
J. M. Levis, *M. M*...................Marion, Ga.
Shenandoah Valley R. R. 4-8½ g. 143 m. 15 lo. 104 c.
J. H. Sands, *Supt*.............Hagerstown, Md.
Chas. Blackwell, *Supt. of M. P.*.Roanoke, Va.
Shenango & Allegheny R.R 4-9½ g. 47 m. 6 lo. 156 c
J. T. Blair, *G. Supt. & Pur. Agt.* Greenville, Pa.
Edw Richardson, *M. M. & C. B.* Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 27 cars.
Edwin McNeill, *Supt*.............Litchfield, Ct.
C. M Allen, *M. M*.................Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt*.................Ripley, Miss.
Silver Lake Ry. 6 g 6 m. 2 lo. 3 cars.
E. G. Matthews, *Supt*.............Perry, N. Y.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 15 lo. 216 c.
P. E. Hall, *Gen. Man. & P. A.* Cedar Rapids, Ia.
J. S. Wattles, *Supt*.... ... Missouri Valley, Ia.
C. F. McCoy, *Asst. Supt*.............Blair, Neb.
C. H. Foster, *M. M. & C. B.* Missouri Valley, Ia.
Skaneateles R. R. 4-8½ g. 5 m. 2 lo. 4 cars.
J. McNamara, *Supt*.........Skaneateles, N. Y.
Somerset R. R. 4-8½ g. 25 m. 2 lo. 11 cars.
W. M. Ayer, *Act. Supt*...... W. Waterville, Me.
South Carolina Ry. 5 g. 243 m. 42 lo. 685 cars.
John B. Peck, *Gen. Man*.......Charleston, S. C.
S. B. Pickens, *Pur. Agt*........Charleston, S. C.
P. J. Cochrane, *Mast. of Mach.* Charleston, S. C.
Geo. H. Gramling, *M. C. B*....Charleston, S. C.
South-Eastern Ry. 4-8½ g. 161 m. 14 lo. 446 cars.
Bradley Barlow, *Gen. Man*.....St. Albans, Vt.
H. A. Alden, *Supt*................ Richford, Vt.
A. G. Eastman, *M. M*..............Richford, Vt.
South Florida R. R. 3 gauge 40 miles.
B. R. Swoope, *Supt*.. ....Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m.
W. H. Woodward, *Supt.* Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 10 lo. 260 cars.
A. H. Fracker, *Gen Supt.*.San Francisco, Cal.
E. L. Reese, *M. M. & C. B*.. ....Newark, Cal.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
M. Tabler, *Supt*....... ..... Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 114 m. 16 lo. 447 c.
James G. Knapp, *Supt*.. ....Auburn, N. Y.
Chas. G. Brown, *M. M*... ......Auburn, N. Y.
H. Mooney, *M. C. B*..............Auburn, N. Y.
Southern Maryland R. R. 4-9 g. 47 m.
Shields Burr, *Supt*............Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 161 m. 29 lo. 728 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C Bassett, *Supt*.......San Francisco, Cal.
J. R. Watson, *Pur. Agt*...San Francisco, Cal.
J. T. Wilson, *M. M*..... ..San Francisco, Cal.
F. N. Bellisle, *M. C. B.* ...San Francisco, Cal.
Springfield, Effingham & So.-Eastern and
Bloomfield Rys. 3 g. 89 m.
E. Pratt Buell, *Gen. Man*.... .....Robinson, Ill.
Spring Hill & Parrsboro Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. Skillan, *Supt*..................Parrsboro, N. S.
Springville & Sardinia Ry. 3 g. 12 m. 2 lo. 9 c.
B. Chafee, *Pres*.... ....Springville, N. Y.
St. Clairsville Ry. 3 ft. gauge 7 miles 1 lo. 3 cars.
J. H. Patterson, *Pres*... . ....St. Clairville, O.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt*........ .. Calais, Me.
G. H. Corsen, *M. M*.... .. ..Milltown, Me.
H. C. Tincker, *M. C. B*............Milltown, Me.

St. Joe & Desloge Ry. 3 ft gauge.
J. Naramore, *Supt*............Bonne Terre, Mo.
St. John & Maine Ry. 4-8½ g. 92 m. 6 lo. 110 cars.
H. D. McLeod, *Supt.*
St. John's Ry 4-8½ g. 12 m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt.* .Jacksonville, Fla.
Jas. M. Owens, *M. of Mach.*.Jacksonville, Fla.
St. Johns & Lake Eustis Ry. 3 g. 26 m.
T. S Davies, *Supt*............... Volusia, Fla.
St. Johnsb'ry & Lake Champ 4-8½ g. 120 m 10 lo. 197 c.
A. B. Jewett, *Supt. & P. A.*.St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B.* St. Johnsbury, Vt.
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. 4-8½ g. 59 m. 10 l. 146 c.
Walter Shanley, *Gen. Man* ....Ottawa, Ont.
Calvin Dame, *M. M. & C. B*... .Prescott, Can.
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See Ind. & St. L. Div.: Ohio Ry.*)
St. Louis & Cairo Div.: 4-8½ g 123 m. 16 lo. 778 c.
G. W. Parker, *Gen. Man* ......St. Louis, Mo.
A. M. De Clerq, *M. M*..........St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 17 m. 15 lo. 11 cars.
Wm. Taussig, *Gen. Man*..........St. Louis, Mo.
G. O. Clinton, *Supt*...............St. Louis, Mo
E. J. Brandley, *Pur. Agt*........ St. Louis, Mo.
H. M Smith, *M. M*................St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 28 m. 1 lo. 78 cars.
R. J. Cavett, *Supt*...............Carbondale, Ill.
St. Louis, Ft. Scott & Wichita R. R. 20 miles.
F. Tiernan, *V. P. & Gen. Man.*.Fort Scott, Kan.
J. D. Hill, *Gen. Supt* ....Fort Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 59 m. 1 lo. 23 c.
W. W. Walker, *Supt*...... .....Hannibal, Mo.
Geo. Douglass, *Pur. Agt*.........Hannibal, Mo.
St. Louis, Iron Mountain & Southern Ry. (1):
International & Great Northern R. R. (2); and
Texas & Pacific Ry. (3).
4-8½ g. 2,678 m. 240 lo. 6,119 cars.
H. M. Hoxie, *Gen. Man*..........St. Louis, Mo.
R. B. Lyle, *Gen. Pur. Agt*........ St. Louis, Mo.
(1) St. L., I. Mt. & So. 4-8½ g. 710 m. 137 lo. 4,081 c.
E. L. Dudley, *Supt*...... ....St. Louis, Mo.
O. A. Haynes, *Supt. Mach*........St. Louis, Mo.
Oscar Doolittle, *M. C. B*...........St. Louis, Mo.
St. Louis Div.: J. J. Frey, *Supt*....St. Louis, Mo.
W. H. Harris, *M. M*..... .... De Soto, Mo.
H. M. Aldrich, *M. C. B*......... De Soto, Mo.
Ark. Div.: Wm. Kerrigan, *Supt.* Little Rock, Ark.
L. Finlay, *M. M. & C. B*.....Little Rock, Ark.
(2) Inter. & Gr't No'n R. R. 4-8½ g. 776 m. 45 lo 932 c.
Jos. Herrin, *Supt*.................Palestine, Tex.
R. H. Johnson, *M. M*..... ......Palestine, Tex.
H. H. Sessions, *M. C. B*..........Palestine, Tex.
3) Texas & Pac. Ry. 4-8½ g. 1,030 m. 58 lo. 1,106 c.
Geo. L. Sand, *Supt*..............Marshall, Tex.
J. F. Sechler, *Gen. M. M* ....Marshall, Tex.
H. H. Sessions, *M. C. B*..........Marshall, Tex.
So'n Div.: Hugh Irvine, *Supt*.....Longview, Tex.
H. I. Bearup, *M. M*..............Marshall, Tex.
Tr. Con. Div.: J. S. Noble, *Supt.* Texarkana, Ark.
Thos. Ormerod, *M. M*.........Texarkana, Ark.
W'n Div.: Wm. Davis, *Supt* .....Ft. Worth, Tex.
W. H. Reilly, *Asst. G. M. M.* Fort Worth, Tex.
St. L. Keokuk & No.-W'n. 4-8½ g. 187 m. 14 lo. 312 c.
A. L. Griffin, *V. Pr. & Gen. Supt*...Keokuk, Ia.
H. B. Blood, *Supt*....................Keokuk, Ia.
John A. Blood, *Pur. Agt*..... .....Keokuk, Ia.
Wm. Foley, *M. M* ... .Keokuk, Ia.
St. L., Salem & Little Rock. 4-9 g. 69 m. 5 lo. 103 c.
H. A. Crawford, *V. Pr. & P. A*...St. Louis, Mo.
E. B. Sankey, *Supt*...................Salem, Mo.
Thomas Everson, *M. M*. ....Steelville, Mo.
J. W. Houston, *M. C. B*............Steelville, Mo.
St. L., Van. & T. H. (*See T. H. & I. Div. of Penna. Co.*)
St. L. & San Fran. Ry. 4-8½ g. 758 m. 71 lo. 2,490 c.
C. W. Rogers, *2d V. Pr & G. Man.*.St. Louis, Mo.
D. H. Nichols, *Mast. Tran.*.No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*.........St. Louis, Mo.
M. Kearney, *M. M. & C. B.*.No. Springfield, Mo.
Mo. & Ark. Div.: W. A. Thoms, *Supt.* do.
Kan Div.: J. R. Wentworth, *Supt.* Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 1 lo.
A. E. Killam, *Manager*........St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,050 m. 116 lo. 3,116 cars.
A. Manvel, *Gen. Man*............St. Paul, Minn.
H. C. Ives, *Asst. Gen. Man*......St. Paul, Minn.
E. B. Wakeman, *Supt. Trans*... St. Paul, Minn.
J. C. Morrison, *Pur. Agt*......... St. Paul, Minn.
A. A. Ackerly, *M. M*........ ... St. Paul, Minn.
Breck. Div.: A. Guthrie, *Supt*.. .St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*........St. Paul, Minn.
No'n Div.: C. O Wheeler, *Supt.* Fergus Falls, Minn.
St. Paul & Duluth R.R. 4-8½ g. 195 m 24 lo. 580 c.
S. R. Stimson, *Gen. Supt* ....St. Paul, Minn.
J. G. Callahan, *Pur. Agt*.........St. Paul, Minn.
W. McFarland, *M. M*..............St. Paul, Minn.
John Hill, *M. C. B.* ....St. Paul, Minn.
State Line & Sullivan R. R. 4-8½ g. 29 m. 2 lo. 3 c.
J. O. Blight, *Supt*...................Towanda, Pa.
Staten Island R. R. 4-8½ g. 13 m. 4 lo. 17 c.
John W. Wilber, *Supt*.............Tottenville, N. Y.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt*...........Sloatsburg, N. Y.
Stony Creek R. R. 4-8½ g. 10 miles.
Geo. B. Boggs, *Supt*.............Norristown, Pa.
Strasburg R. R. 4-8½ g. 5 miles.
Isaac Phenegar, *Lessee*..... ..Leman Place, Pa.
Sussex R. R. (*See Del., L. & W.*)
Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syracuse, Chenago & N. Y. 4-8½ g. 44 m. 4 lo. 60 c.
Albert Allen, *Supt*..... ....Syracuse, N. Y.
George W. West, *M. M*... ....Syracuse, N. Y.
Wm. J. McMichael, *M. C. B*... Syracuse, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque
& Antrim R. Rs. 4-8½ g. 121 m. 23 lo. 1,044 c.
A. H. Gorton, *Supt*...... ....Corning, N. Y.
Andrew Beers, *Pur. Agt*.. ......Corning, N. Y.
O. C. Patchell, *M. M. & C. B*....Corning, N. Y.

T

Talbotton R. R. 7 miles.
W. H. Martin, *Supt*...............Talbotton, Ga.
Terre Haute & Indianapolis R. R. (*See Penna. Co.*)
Terre Haute & Logansport R. R. (*Op. by T. H. & Ind.*
Terre Haute & So.-Eastern Ry. 4-9 g. 40 miles.
Geo. Atherton, *Supt*........ . Terre Haute, Ind.
Texas-Mexican; and Mexican National Rys.
3 g. 217 m. 4 lo. 54 cars.
G. C. Gardner, *Gen. Man* ....New York, N. Y.
A. R. Roberts, *Pur. Agt* ... .New York, N. Y.
S. T. Fuller, *Gen. Supt*... Corpus Christi, Tex.
Tex. Mex. Ry.: Wm. Sutcliffe, *M. M. & C. B.* do.
Mex. Nat. Ry.: J. C. Monroe, *M. M.* Mexico, Mex.
Maj. W. J. Brokaw, *M. M*.... Manzanillo, Mex.
Texas Western Ry. 3 g. 42 m. 2 lo. 34 cars.
J. W. Goodwin, *Supt*...........Houston, Tex.
Texas & New Orleans; Louisiana W'n: and Morgan's
Louisiana & Tex. R. Rs. 4-8½ g. 362 m. 4 lo. 276 c.
J. F. Crosby, *Gen. Man*..........Houston, Tex.
P. B. Watson, *Pur. Agt*..........Houston, Tex.
C. A. Burton, *Supt*.............Houston, Tex.
D. C. Smith, *M. M*................Houston, Tex.
J. M. Mather, *M. C. B*..........Houston, Tex.

M. L. & T. Div.: G. Pandeley, *Supt.* N. Orleans, La.
N. Tilton, *M. M*.................Algiers, La.
William O'Brien, *M. C. B*........Algiers, La.
Texas & Pacific Ry. (*See St. L., Iron M. & S'n. R. R.*)
Texas & St. Louis Ry. 3 g. 258 m. 10 lo. 241 cars.
J. W. Brown, *Gen. Supt* ....Tyler, Tex.
F. W. Paramore, *Pur. Agt* . ... St. Louis, Mo.
W. J. Lewis, *M. M*..................Tyler, Tex.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 54 m. 17 lo. 953 cars.
L. H. Shattuck, *Supt*..............Blossburg, Pa.
James A. Drake, *Pur. Agt*........Elmira, N. Y.
Pere Bonny, *M. M*................Blossburg, Pa.
D. H. Stratton, *M. C. B*...... .Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 84 m. 7 lo. 107 c.
M. D. Woodford, *Gen. Man*..Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do
C. C. Dodge, *M. M*....... ....Ann Arbor, Mich.
Toledo, Delphos & Burl. R. R. 3 g. 422 m. 21 lo. 694 c.
T. A. Phillips, *Gen. Man*.............Toledo, O.
J. H. F. Wiers, *Supt. Mach. & P. Agt* Toledo, O.
Tol. & Day. Div.: A. M. Matheany, *Supt.*; and
E. Clemons, *M. M*..................Delphos, O.
S.-E'n Div.: R. B. Jones, *Supt*.... .Dayton, O.
F. McCreary, *M. M*...............Dayton, O.
Toledo & South Haven R. R. (*See Paw Paw.*)
Tonawanda Valley R. R. 3 g. 19 m. 1 lo. 13 cars.
J. V. D. Loomis, *Supt*..... ....Attica, N. Y.
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m 20 lo 446 c.
Edmund Wragge, *Gen. Man*... .Toronto, Can.
W. Watson, *Pur. Agt* .... Toronto, Can.
David Preston, *M. M*.......... Toronto, Can.
Toronto & Nipissing Ry. 3-6 g. 105 m. 12 lo. 211 c
John Duncan, *Supt*......... .... Toronto, Can.
John Symons, *Pur. Agt*.. ....Toronto, Can.
J. Haggas, *M. M*..................Toronto, Can.
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt*......Troy, N. Y.
Joseph Crandell, *Supt*............. Troy, N. Y.
Z. B. Davis, *M. M* ....Troy, N. Y.
R. V. Coon, *M. C. B*.................Troy, N. Y.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 28 cars.
J. J. Pharo, *Supt*..... ....Tuckerton, N. J.
Tuskegee R. R. 3 g. 5 m. 1 lo. 6 cars.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 7 lo. 142 cars.
Jas. H. Jones, *Supt*.............Rondout, N. Y.
Geo. W. Wright, *M. M* ....Rondout, N. Y.
John H. Decker, *M. C. B*........Rondout, N. Y.
Union Pacific Ry. (4 Gen. Divs.)
3 & 4-8½ g. 3,650 m 318 lo. 6,157 cars.
S. H. H. Clark, *Gen. Man*.........Omaha, Neb.
Thos. L. Kimball, *Asst. Gen Man.* Omaha, Neb.
A. D. Clarke, *Pur. Agt*............Omaha, Neb.
(1) Union Div.: J. T. Clark, *Gen Supt*...Omaha, Neb.
I. H. Congdon, *Gen. M. M*........Omaha, Neb.
Geo. E. Stevens, *Supt. Car Dept.* Omaha, Neb.
East. Divs.: P. J. Nichols, *Supt*....Omaha, Neb.
Robt. McConnell, *M. M*........ Omaha, Neb.
A. M. Collett, *M. C. B*...........Omaha, Neb.
Jas. H. McConnell, *M. M*.....No. Platte, Neb.
A. Reis, *For. Car. Sh*.........No. Platte, Neb.
Mtn. Div.: Robt. Law, *Supt*....Cheyenne, Wy. T.
T. A. Davies, *M. M*.........Cheyenne, Wy. T.
J. E. Davies, *For. Car. Sh.*.Cheyenne, Wy. T.
Lar. Div.: E. Dickinson, *Supt*...Laramie, Wy. T.
R. Galbraith, *M. M*..........Laramie, Wy. T
R. M. Galbraith, *M. M*.......Rawlins, Wy. T
Frank Blake, *For. Car. Sh*...Rawlins, Wy. T.
West. Div.: W. B. Doddridge, *Supt.* Evanston, Wy. T
C. C. Quinn, *M. M*.........Evanston, Wy. T.
R. V. Brinkley, *For. Car. Sh.* Evanston, Wy. T.
Utah Nor. Div.: G. W. Thatcher, *Supt.*, Logan, U.
R. Craft, *M. M*... ....Logan, U.
F. Reardon, *M. M*.........Eagle Rock, Idaho.
F. M. Shoemaker, *For. Car. Sh.* Eagle R'k, Ida.
Col. Div.: A. A. Egbert, *Supt*... .....Denver, Col.
Fred. Metzheimer, *M. M*..........Golden Col
E. G. Thomas, *For. Car. Sh*......Golden, Col.
St. J. & W'n. Rd.: L. D. Tuthill, *Supt.* St. Joseph, Mo.
E. Sleppy, *M. M*.........Grand Island, Neb.
E. Hansen, *For. Car. Sh*...... Elwood, Kan.
(2) Kansas Div.: S. T. Smith, *G. Supt.* Kansas C'y, Mo.
Jno. Mackenzie, *Supt. Mach.* Armstrong, Kan.
T. B. Roberts, *M. C. B*... Armstrong, Kan.
K. Val. Div.: J. O. Brinkerhoff, *Supt.* Kan. C'y, Mo.
Jas. Mackenzie, *M. M*...... .Armstrong, Kan.
Smoky Hill & Denver Divs.:
O. H. Dorrance, *Supt*..........Wallace, Kan.
J. B. Dailey, *M. M.* (S. H. Div.).....Ellis, Kan.
Chey. Div.: A. A. Egbert, *Supt*..... Denver, Col.
R. McDougall, *M. M.* (D. & C. Divs.) Denver, Col.
W. Ogle, *For. Car. Sh.* (D. & C. Divs.) do.
(3) Denver & South Park Div. 3 ft. gauge 227 miles.
C. W. Fisher, *Gen Supt*. ....Denver, Col.
J. H. Kirk, *M. M*............. ....Denver, Col
(4) Nevada Central Ry. 3 g. 93 m. 5 lo. 82 cars.
F. W. Dunn, *Supt*........Battle Mountain, Nev.
Z. T. Spriggs, *M. M*..... Battle Mountain, Nev.
United States Rolling Stock Co. 23 lo. 4,834 cars.
A. Hegewisch, *Pres*............New York, N. Y.
C. F. Jauriet, *Gen. M. M. & P. A.* Chicago, Ill.
Utah Central Ry. 4-8½ g. 280 m.
John Sharp, *Gen. Supt*...Salt Lake City, Utah.
S. H. Hill, *Pur. Agt* ......Salt Lake City, Utah.
W. B. Armstrong, *M. M*..Salt Lake City, Utah.
Peter Reid, *M. C. B*.......Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m.
W. W. Ritter, *Gen. Man*...Salt Lake City, Utah.
Robert Anderson, *M. M*...Salt Lake City, Utah.
Utah & Pleasant Valley Ry. 60 m.
G. M. Young, *Man* ....Salt Lake City, Utah.
Utica, Ithaca & Elmira Ry. 4-8½ g. 127 m 11 lo. 152 c.
G. Jas. Rice, *Pres & Supt* .Horse Heads, N. Y.
J. L. Greatsinger, *Pur. Agt*....Breesport, N. Y.
Geo. W. Cleveland, *M. M*...... Breesport, N. Y.
Wm. Ells, *M. C. B*..............Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 329 c.
J. F. Maynard, *Gen. Supt. & P. A.*.Utica, N. Y.
John Bailey, *M. M*..................Utica, N. Y.
David James, *M. C. B*..............Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. B. Stevenson, *Gen. Supt*... ..Vacaville, Cal.
Valley Ry. 4-8¾ g. 59 m. 10 lo. 317 cars.
Samuel Briggs, *Supt*.... .... Cleveland, O.
B. C. Bosworth, *M. M* ....Cleveland, O.
Chas. Blanchard, *M. C. B*.... . Cleveland, O.
Vermont Valley & Sullivan R. Rs (*See Conn. Riv.*)
Vernon, Greensburg & Rushville R. R. 25 m.
Horace Scott, *V.-Pres* ... .Greensburg, Ind.
Vicksburg, Shreveport & Pacific, and
Vicksburg & Meridian R. Rs. (*See Cin., N. O. & T. P.*)
Victoria Ry. (*See Midland of Can.*)
Virginia Midland Ry. 4-8½ g. 405 m. 38 lo 631 cars.
T. M. R. Talcott, *Gen. Man*.....Richmond, Va.
W. M. S. Dunn, *Eng. & Supt*...Alexandria, Va.
J. E. Waddey, *M. M*..........Alexandria, Va.
J. T. Nalls, *M. C. B*...........Alexandria, Va.

Virginia & Truckee R. R. 4-8½ g. 52 m. 24 lo. 354 c.
Carson & Colorado R. R. 3 g. 150 m. 4 lo. 76 c.
H. M. Yerington, *Gen. Supt*...... Carson, Nev.
R. J. Laws, *Supt.* (C. & Co.) Mound House, Nev.
C. P. Mason, *Pur. Agt*.............Carson, Nev.
I. N. Fording, *M. M*.. ....Carson, Nev.
B. Lyons, *M. C. B*.... ....Carson, Nev.

W

Wabash, Chester & W'n R. R. 4-8½ g. 42 m. 2 lo. 32 c.
J. L. Hinckley, *Gen. Supt*...........Chester, Ill.
Wabash, St. Louis & Pacific Ry. (3 Gen. Divs.)
4-8½ g. 3,241 m 559 lo. 17,230 cars.
John C. Gault, *Gen. Traffic Man.* St. Louis, Mo.
Robert Andrews, *Gen. Supt*.....St. Louis, Mo.
W. F. Merrill, *Asst. Gen. Supt*....St. Louis, Mo.
R. W. Green, *Pur. Agt*............St. Louis, Mo.
(1) Eas'n Div.: U. H. Kohler, *M. C. B*......Toledo, O.
Ohio & Ind. Div.: G. W. Stevens, *Supt.*; and
C. R. Morris, *M. M*..........Fort Wayne, Ind.
Ill. Div.: H. F. Clark, *Supt*........Springfield, Ill.
Jacob Johann, *M. M*..........Springfield, Ill.
B. B. Rose, *M. C. B*................Decatur, Ill.
Rant'l Div.: B. F. Mathias, *Supt*.....Rantoul, Ill.
J. McCarthy, *M. M*.......... ....Rantoul, Ill.
Cairo Div.: D. G. Moore, *Supt*.... .....Cairo, Ill.
A. Van Tuyl, *M. M*... ....Carmi, Ill.
(2) St. L., K. C. & N. Div.: G. W. Parsell, *Supt.* and
W. H. Selby, *M. M*..............Moberly, Mo.
C. S. Buck, *M. C. B*.................Moberly, Mo.
Kan. Cy. Div.: M. G. Cary, *Supt.* Kansas City, Mo.
C. B. & O. Div.: J. W. Blanchard, *Supt.*; and
J. S. Hazen, *M. C. B*...........Stanberry, Mo.
Quincy Div.: F. D. Schermerhorn, *S.* Quincy, Ill.
(3) Chi. & Ia. Div.: Wm. O. Hewitt, *M. M.* Peoria, Ill.
R. M. Hemphill, *M. C. B* ....Peoria, Ill.
Chicago Div.: A. A. Hobart, *Supt*....Chicago, Ill.
Peoria Div.: F. L. Tomkins, *Supt* ..... Peoria, Ill.
Iowa Div.: E. N. Armstrong, *Supt* . Keokuk, Ia.
D. Moin. Div.: H. B. Skeele, *Supt.*.Des Moines, Ia.
Walla Walla & Columbia Riv. R. R. (*See Ore. Ry.*)
Walkill Ry. 4-8½ g. 117 m. 9 lo. 169 cars.
G. H. Graves, *Supt*.......... ...Rondout, N. Y.
J. B. Dykeman, *M. M* .... Rondout, N. Y.
John H. Decker, *M. C. B*........Rondout, N. Y.
Wasatch & Jordan Val. R. R. 3 g. 44 m. 7 lo. 300 c.
Geo. M. Young, *Supt*.....Salt Lake City, Utah.
Warwick Valley R. R. 4-8½ g 28 m. 2 lo. 18 cars.
Grinnell Burt, *Pres. & Pur. Agt.* Warwick, N. Y.
Chas. Caldwell, *Supt*.............Warwick, N. Y.
Washington & Ohio R. R. 4-8½ g. 52 m. 5 lo. 79 c.
R. H. Havener, *Gen. Supt*.... Alexandria, Va.
Edward Dunn, *M. M*...........Alexandria, Va.
John Harrison, *M. C. B*........Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 28 m. 3 lo 15 c.
Jacob Swart, *Gen. Man*......Waynesburg, Pa.
J. G. Ritchie, *Supt*............Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 3 lo. 147 cars.
William Pay, *Supt*.........St. Catharines, Ont.
Jas. Taylor, *M. M*... ......St. Catharines, Ont.
Wm. H. Pay, *M. C. B*......St. Catharines, Ont.
West End Narrow Gauge Ry. 3 g. 16 m.
Rolla Wells, *Supt*............. . St. Louis, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars.
J. B. McGehee, *Pr. & Gen. Supt.* Bayou Sara, La.
J. A. Tilton, *M. M. & C. B*.....Bayou Sara, La.
West Jersey R. R. (*See Penn. R. R.*)
West Virginia, Central & Pittsburgh Ry. 13 miles.
W. E. Porter, *Gen. Supt*......Piedmont, W. Va.
Western R. R. (of Ala.) 5 g. 88 m. 15 lo 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 206 c.
Cecil Gabbett, *Gen. Man. & Supt.*..Mont., Ala.
Robert King, *M. M*........ .....Montgomery, Ala.
F. M. Wade, *M. C. B* ....Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt*. ....Yarmouth, N. Y.
Western Maryland R. R. 4-8½ g. 157 m. 16 lo. 394 c.
J. M. Hood, *Pr. & Gen. Man*.... Baltimore, Md.
R. J. Adair, *Pur. Agt*........... Baltimore, Md.
David Holtz, *Mast. of Mach.* Union Bridge, Md.
J. H. Nussear, *M. C. B*.. .....Union Bridge, Md.
Western No. Carolina R. R. 4-8½ g. 155 m. 6 lo. 36 c.
V. E. McBee, *Supt*.............Salisbury, N. C.
Geo. P. Erwin, *Pur. Agt*........Salisbury, N. C.
G. W. Gates, *M. M*...... . ...Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 58 lo. 952 c.
R. A. Anderson, *Gen. Supt*..........Atlanta, Ga.
W. R. Webster, *Pur. Agt*............Atlanta, Ga.
John H. Flynn, *M. M*................Atlanta, Ga.
W. G. Grambling, *M. C. B*.... .....Atlanta, Ga.
Wheeling & Lake Erie R. R. 143 miles.
J. S. Oliver, *Gen. Man. & Supt*. ...Norwalk, O.
L. James, *Supt. Mach. & Car Dept.* do.
Whitby Pt., Perry & Lindsay Ry. (*See Midland, Can.*)
White Water R. R. 4-8½ g. 62 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt.* Ft. Wayne, Ind.
L. W. Wingert, *M. M. & C. B*......Harrison, O.
Whitefield & Jefferson R. R. 4-8½ g. 10 m.
A. L. Brown, *Supt*....... ..... Whitefield, N. H.
Wicomoco & Pocomoke R. R. 4-8½ g. 23 m. 2 lo. 38 c.
H. R. Pitts, *Supt* .... Berlin, Md.
Williamstown R. R. 4-8½ g. 10 m. 1 lo. 10 cars.
Sam'l Garwood, *Supt*......Williamstown, N. J.
Wilmington & No'n R. R. 4-8¾ g. 77 m. 13 lo. 148 c.
J. H. Thompson, *Supt*..........Coatesville, Pa.
George Rommel, *M. M*..........Coatesville, Pa.
Wilmington & Weldon; Northeastern S. C.;
Cheraw & Darlington; Cheraw & Salisbury; and
Wilmington, Columbia & Augusta R. Rs.
5 g. 516 miles 71 locomotives 942 cars.
R. R. Bridgers, *Gen. Man*.... Wilmington, N. C.
J. F. Divine, *Gen. Supt*.......Wilmington, N. C.
John Bisset, *M. M*.................Florence, S. C.
W. H. Day, *M. C. B*...............Florence, S. C.
C. R. Clowe, *M. C. B.* ......Wilmington, N. C.
Rich. & Petersb. R.R. 4-8½ g. 25 m 8 lo 130 cars.
Theo. D. Kline, *Supt*.......... ...Richmond, Va.
John O'Brien, *M. M*............Richmond, Va.
H. L. Carter, *M. C. B*...........Richmond, Va.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 156 c.
P. Innes, *Gen. Man*.............Kentville, N. Y.
Wisconsin Central R. R. 4-8½ g. 480 m 31 lo. 783 c.
F. N. Finney, *Gen. Man*.........Milwaukee, Wis.
J. W. Curtis, *Pur. Agt*.........Milwaukee, Wis.
J. B. Henney, *Supt. M. P. & M.* Stevens Pt., Wis.
Mil. & E'n Divs.: C. F. Dutton, *S.* Milwaukee, Wis.
W. & No. Div.: G. Campbell, *S.* Stevens Point, Wis
Wood River Branch R. R. 4-8½ g. 6 m. 2 lo. 4 cars.
L. M. Barber, *Supt* ....Hope Valley, R. I.
Woodstock R. R. 4-8½ g. 14 miles. 1 lo. 5 cars.
J. G. Porter, *Supt* ....Woodstock, Vt.
Worcester R. R. (*See Junc. & Break.*)
Worcester & Nashua; and Nashua & Rochester R. Rs.
4-8½ g 95 m. 20 lo. 468 cars.
C. S. Turner, *Pres. & G. Man.* Worcester, Mass.
G. W. Hurlburt, *Supt*.........Worcester, Mass.
John G. Brady, *M. M. & C. B.* Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 miles.
J. F. Bigelow, *Supt*............Worcester, Mass.
Worcester & Somerset R. R. 4-8½ g. 10 m. 1 lo. 4 c.
J. L. Bates, *Supt*... ......Pocomoke City, Md.

Y

Youghiogheny R. R. 4-9 gauge.
Wm. Wilson, *Supt*....... ... .Irwin's, Pa.

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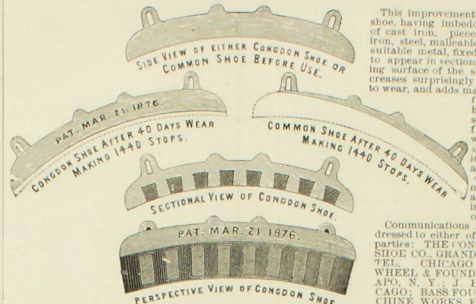

This improvement consists of a shoe, having imbedded in its body of cast iron, pieces of wrought iron, steel, malleable iron, or other suitable metal, fixed therein so as to appear in sections on the wearing surface of the shoe, which increases surprisingly its resistance to wear, and adds materially to the friction or adhesion of the shoe to the surface of the wheel. These shoes are now in extensive and general use on many prominent railroads, and are effecting a saving of over fifty per ct.

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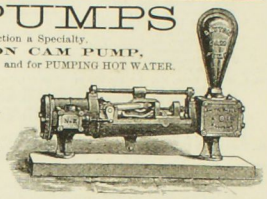

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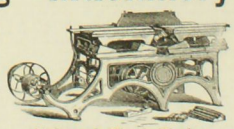

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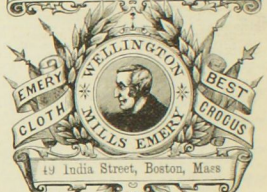

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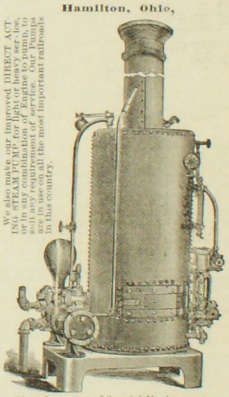

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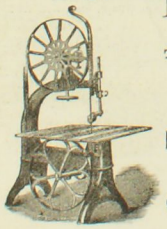

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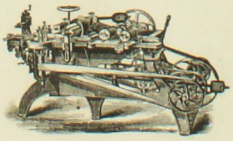

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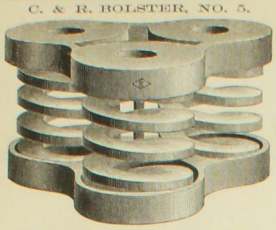

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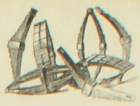

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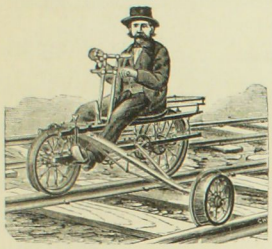

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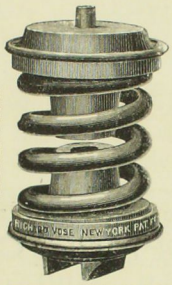

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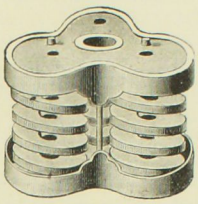

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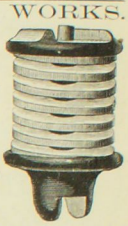

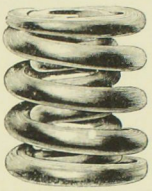

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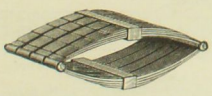

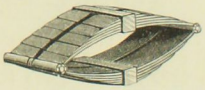

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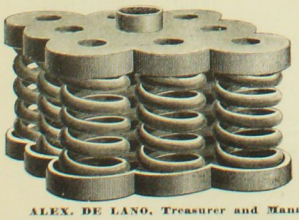

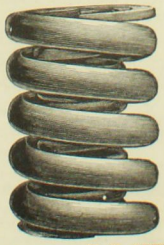

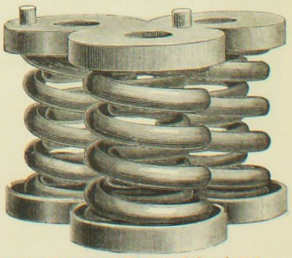

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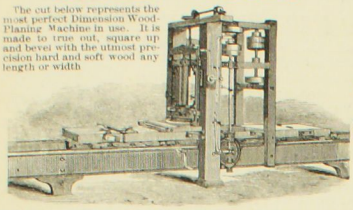

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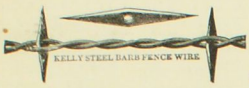

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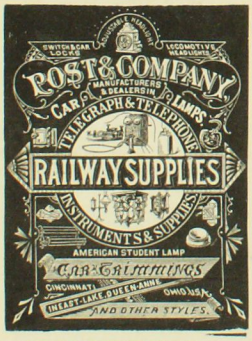

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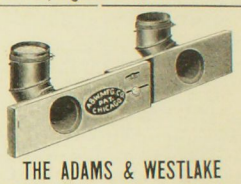

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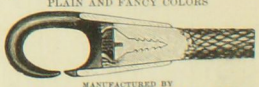

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